EVALUATION OF A MAILED PLANNING SURVEY

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A methodological evaluation of a mailed planning survey was made to obtain information that would help assess the application of mail surveys for providing planning information. The scope of the study was limited to evaluating the combined application of mail and nonmail follow-up procedures for reducing nonresponse and total survey costs and to assessing how critical nonresponse might be to planning surveys. A mailed planning survey of a small community population was conducted using mail, telephone, and personal follow-ups. Survey respondents were determined by selected sociodemographic characteristics, and the cost and contribution of the follow-up procedures were also determined. The survey obtained residents' opinions and suggestions for improvements in community facilities, services, and conditions over 12 major categories of community concern. Survey response was found to be more strongly associated with the resident time of the respondents than it was with their age, sex, socioeconomic status, family status or size, tenure, or type of dwelling unit. Respondents were found more likely than nonrespondents to be old, long-time residents, and owners of single-unit dwellings. Nonmail follow-ups were found to be effective in reducing the typical socioeconomic bias found in the response to the mail-out portions. On the basis of cost versus information obtained, the results indicated that the combined use of the mail approach with mail, telephone, and personal follow-ups could be comparable to the use of other methods for planning surveys having an informative purpose.

SURVEYS of economic base, land use, transportation, and population predominate among those considered essential to urban planning. Recently, planners have come to be increasingly interested in using attitude and opinion survey data in the planning process. Although experience in conducting social surveys for planning purposes is still limited, initial experiences in surveying urban residents' reactions to urban problems indicate a wide range of application. For example, planning surveys have been conducted to obtain residents' general evaluation of their community environments (1), preferences for accessibility to selected neighborhood services (2), suggestions for needed community facilities and programs (3), attitudes about the relative importance of the livability features of their community (4), and comments about subjects related to community objectives (5).

The orientation of this study might best be indicated with the aid of a conceptual framework suggested by Gans (6). Gans defined two conceptual environments: the potential environment (i.e., as seen by the planner) and the effective environment (i.e., the version of the potential environment that is manifestly or latently adopted by users). The viewpoint of this study was that survey data of perceptions and reactions to community facilities, services, or conditions are, in part, descriptive information about the effective environment. This descriptive kind of information is not considered sufficient within itself for explaining why specific groups have particular preferences or for predicting what the effective environment will be. These latter purposes are more of an analytical or explanatory nature that presume a solid base of descriptive information that is currently not available (7). This study was limited to the informative survey purpose on the premise that descriptive survey data can perform the role of giving the planner more information and insight about the effective environment.

In the past, planning agencies have relied on public hearings and discussions with organized reference groups to obtain informative inputs from the public. Sample surveys offer an additional approach to obtain information from a wider cross section of the general public. There are various survey approaches that could be taken. The mail and interview survey methods are predominantly used. In part, the typical problems associated with mail and interview surveys still prevent most small community (less than 100,000 population) planning agencies from undertaking surveys more frequently. Both methods have their advantages and disadvantages depending on the specific survey situation and purpose. The response problem of mail surveys often precludes their consideration as a possible alternative, and this may have contributed to their limited application in planning studies.

In many situations, the type of data sought dictates the use of the interview method. In other instances, either the mail or interview technique could be used when closer attention is given to the data sought and the actual use to which they will be put. For such situations, the economic advantage of using mail surveys with follow-up procedures makes their application in the planning context attractive both for periodic data collection and for situations where limited funds preclude the interview method. For example, one of the surveys done by Barnes secured 71 percent return for a personally delivered questionnaire with three follow-ups, two by mail and one by telephone (8). Such mail survey applications in planning, however, have been limited. Associated with this limited experience is a lack of information that would help evaluate the combined use of the mail approach with follow-up methods in various planning situations to reduce overall survey costs and nonresponse.

STUDY PURPOSE AND SCOPE

The general objective of this study was to make a methodological evaluation of a mailed planning survey for the purpose of obtaining further information that would help evaluate the application of mail surveys in the planning context. The scope of the research was limited to estimating the suitability of the mail approach for planning surveys of the general population and its combined use with different follow-up procedures to reduce nonresponse and total survey costs. A mailed planning questionnaire with both mail and nonmail follow-up procedures was used to achieve the primary study objectives: to determine the respondents and nonrespondents on the basis of selected individual and household characteristics and to determine the cost and contribution of follow-up procedures for reducing nonresponse.

STUDY DESIGN

The general design of this study was to determine the characteristics of the respondents to a mail survey and to evaluate the cost and contribution of follow-up procedures. The approach was similar to that used by Hochstim and Athanasopoulos (9). Empirically, individual and household characteristics would be determined for the respondents and household characteristics for the nonrespondents. Follow-up procedures would be considered for their cost per return, number of returns, and how much they improved the sample estimates of the population on selected characteristics. The analysis would consist basically of determining any characteristic differences between respondents and nonrespondents.

The population for this study was the resident households within the corporate city limits of Lafayette and West Lafayette, Indiana. At the time this study was initiated, a home-interview travel survey was being conducted that covered both the cities and the surrounding county. Available from this survey was an accurate sampling frame of households that could be utilized to reduce research costs and to allow a complete enumeration of the study sample on household characteristics. Furthermore, the substantive opinion data could be made available to the transportation and development study.

Selected Procedures

Four follow-ups were chosen for use after the questionnaire was mailed. Two mail follow-ups and two nonmail follow-ups were selected. The two mail follow-ups were a reminder postcard and an additional mailing of the questionnaire, cover letter, and return envelope. The other two follow-ups were a telephone call reminder and a simplified personal contact.

A two-stage design was selected to evaluate the mail and nonmail follow-ups. The basic reason for selecting this type of design was to evaluate the mail follow-ups in the same way that they would be used in practice and still allow a separate comparison of the telephone and personal follow-ups. The procedure was chosen to be as follows. After the initial mailing, the mail follow-ups would be successively sent to the nonrespondent households. After the mail-out portion was completed, the remaining nonrespondent households would be divided into two groups—one to receive a telephone call follow-up and the other a personal follow-up. By using two treatment groups, a comparative evaluation could then be made of using either the telephone or the personal follow-up directly after the mail portion of a survey.

Several considerations were made in selecting what individual and household characteristics were to be obtained. For comparative purposes, characteristics that had been used in past mail research were desired. Of these characteristics, those having a possible association with the interest in the survey subject matter were chosen for descriptive comparisons of the opinion data. The household characteristics were also selected on the basis of their availability for the study population from other data sources.

The individual characteristics selected were age, sex, education, socioeconomic status (SES), and resident time. The household characteristics chosen were city location, occupation of household "head," family composition, number of persons living in the household, home ownership, and type of dwelling unit structure.

Questionnaire Design

There exist a wide range of community subject areas about which planners would be interested in obtaining residents' opinions. Answers to the question of community needs were considered to be of basic informative use. For this reason, the questionnaire design was focused on the question of community improvements. A choice was made to obtain residents' suggestions for improvements in facilities, services, or conditions over some major categories of community concern such as health care, housing, education, transportation, and recreation.

The preceding choice was based on several considerations. Planning is directly or indirectly concerned with the provision of most community facilities and services. Residents' opinions about the same could be useful in locating problem situations needing further study. Also, by using enough major categories to cover most subject areas of community concern, the possible response biases from the variation of public interest and awareness in different subject areas could be attenuated. The scope of these categories would, however, prevent an in-depth coverage with a short questionnaire.

Three basic types of questions at the community level were selected to obtain residents' opinions about improving the community:

1. In which major categories does the community need the most improvement?
2. Should improvement of specific facilities, services, or conditions be given priority?
3. What is the relative importance of several community projects that were then under consideration?

The type of questions used in a mail questionnaire can affect response rates. It is generally recommended in self-administered questionnaires to use mostly closed-form questions such as checklists, rating scales, or inventories to make responding easier (10). In this case, a closed-form structure could have resulted in a questionnaire composed of several "omnibus" checklists of facilities, services, and conditions for evaluative ratings. Such a design was not generally recommended either because it could

produce superficial responses and respondent boredom. Furthermore, it would have required prejudgment of what particular facilities, services, or conditions should be listed. These problems were alleviated by choosing one open and two closed forms. For the second question given previously, the freedom of an open-ended form would obtain more information, and, for the first and third questions, a closed form was considered adequate.

Shown in the Appendix are the four pages of the final questionnaire design. These were printed on one $8\frac{1}{2}$- by 14-in. sheet of white paper with black ink. The page was then folded in booklet form to give the questionnaire a "shorter" look. For the final design, several changes were made in the questions and their wording, based on both pilot test and pretest. The wording of the postcard reminder used for the first mail follow-up was similar to that used by Nichols and Meyer (11).

With the study objectives and the practical constraints in mind, an initial sample size of approximately 500 dwelling units for this study was considered large enough to keep the sample estimates of the population proportions on most characteristics within 10 percent at the 95 percent confidence level (12).

Research costs were reduced by taking the sample for this study from the list of dwelling units selected for interviewing for the Greater Lafayette Transportation and Development Study. The population for that study was all the dwelling units in Tippecanoe County. From an updated field listing of all dwelling units compiled during a land-use inventory 1 year prior, the study selected a systematic sample of every eighth dwelling unit.

Using the aforementioned list, with a random start, every fifth dwelling unit address was selected resulting in 886 dwelling units. Because of fraternities and out-of-the-city addresses, the resulting sample size for the initial mailing was 489 dwelling units.

The initial mailing to this sample would solicit any adult member of the dwelling unit to be the respondent. Although this would present a sampling bias with respect to the population of individuals, it was still the practical approach that a planning agency might use in a mail survey of the general public.

The study was conducted under the name of the Greater Lafayette Community Improvement Study with no organizational sponsor stated.

DATA COLLECTION

A survey in accordance with the study design was taken during October and November. Accurate accounts of the material and labor costs for each procedural stage were kept. The execution of each procedural stage will be briefly discussed.

Mail-Out Questionnaire

The questionnaire, cover letter, and return envelope were mailed with hand-stamped, first-class postage to the 489 selected dwelling unit addresses. For several reasons, only 454 questionnaires were delivered.

Six days after the initial mailing, postcard reminders were mailed to all dwelling units that had not responded. Eleven days after the postcard reminder, a second complete mailing of the same questionnaire with cover letter and return envelope was made to the nonresponding households. Ten days after the second mailing of the questionnaire, the mail portion of the survey was ended.

The returns were then examined for their usability. A return was classified as usable if the respondent answered at least one of the substantive opinion questions. Only five of the questionnaires received were unusable. Conservatively, these were classified as nonresponse.

After the mail-out portion of the survey, there remained 209 nonrespondent cases. These nonrespondent cases were put in numerical order of their case numbers. A systematic sampling of the cases into two groups was then made. The follow-up treatments were then arbitrarily assigned.

Telephone Follow-Up

The telephone and city directories of Lafayette and West Lafayette were used to obtain the telephone numbers of the case addresses. The telephone reminder calls were started 3 days after the cutoff date of the mail portion of the survey. Not all of the households for which a number was listed could be contacted by telephone. Thus, only 65 percent of the subsample was reached by telephone. This percentage was lower than what had been expected. The use of the telephone, however, has to be considered with this associated limitation.

Personal Follow-Up

The canvass of the subsample of households was started 5 days after the cutoff date of the mail-out portion of the survey. All 105 dwelling unit addresses in the subsample were visited one time. Originally, it had been planned to give the household member the option of either completing the questionnaire in the presence of the collectors or completing it at her convenience and returning it by mail. It became apparent, however, after a few contacts that trained personnel would be required to tactfully induce a household member to interrupt her activity and complete the questionnaire on the spot. Pursuing this optional approach would have made the use of untrained personnel for this type of follow-up questionable. For this reason, the approach at the remaining households was to only ask the household member to complete the questionnaire at her earliest convenience and return it by mail. At those households where a personal contact was made, the conversational approach was similar to the approach used with the telephone calls.

At households where no one was at home, a reminder was left. A cover letter, questionnaire, and return envelope were left at the door.

Nonrespondent Household Characteristics

Five characteristics of the nonresponding households were obtained: resident time, occupation of the head of the household, city location, type of dwelling unit, and whether the dwelling unit was owned or being rented. The information for the latter three characteristics was obtained from the data collected in the transportation and development study. The resident time and occupation of the head of the household were determined by using both the preceding study data and the 1970 and 1971 city directories. The occupation listed in the city directory was taken as that of the head of the household. In those cases where the occupation was not reported in the city directory and where the resident time was 1 year or more, the occupational data were taken from the transportation study data. The occupations were coded in the following categories:

1. High SES—professionals, technicians business managers, owners, officials;
2. Middle SES—clerical workers, salesmen, craftsmen, foremen, etc.;
3. Low SES—operatives, unskilled workers, service workers, domestics, etc.;
4. College students; and
5. Retired.

METHODOLOGICAL RESULTS

Initial Sample

The initial dwelling unit sample was checked for any serious bias with respect to the study population. In Table 1, the initial sample proportions on dwelling unit location, type of structure, and tenure are compared with those reported for the study population in the 1970 Census of Housing. The survey sample was proportionally about the same as the population on city location and slightly overrepresentative on single-unit and rented dwellings (Table 1). Even though these latter biases are very small, all comparisons were made with the enumerated sample values to account for these slight differences. The data were compiled and analyzed using a specialized (13) computer program.

Returns

The returns for each procedural stage are given in Table 2. The overall return rate for the survey was 67 percent. The return to the mail-out portion was about what had been expected, 52.7 percent. The percentage of return after the postcard reminder was higher than what had been expected from the pretest results. The return rate for the first two waves was more than 11 percent higher than what was found in the pretest, 42.5 versus 31.0 percent. Some of the improvements could have resulted from differences between the final survey and the pretest, such as improved questionnaire design, timing, or sponsor. The final questionnaire was also shorter and had a better appearance than the pretest form.

After the mail-out portion of the survey was finished, 209 sample households had not responded. These households were separated into two groups for the telephone and personal follow-ups as previously explained. The dwelling unit characteristics of the two groups are given in Table 3 for comparison. Very small differences existed between the two groups on the characteristics shown.

The telephone follow-up obtained 24 additional returns, or 23 percent of the subsample. The low percentage for the subsample is partially attributable to the fact that only 65 percent of the subsample households could be reached by telephone. On the basis of the number contacted, the return rate was 36 percent. This return rate was twice that obtained for the second mailing (18 percent). For those contacted, the response rate was still lower than what had been expected. Voiced intention of cooperation by household members over the telephone proved to be an unreliable criterion.

The use of telephone reminder calls must be considered in the context of the study limitations (e.g., some households not having telephones). The use of a third mailing to those households that cannot be reached by telephone could be an effective supplement to this approach. Omitting the use of this third mailing was an oversight of the study.

The simplified personal follow-up obtained 40 additional returns, or 38 percent of the subsample. Fifty-two percent of the subsample households were personally contacted with the remainder having a reminder letter, questionnaire, and return envelope left at their door. The return rate for those households personally contacted was 40 percent; for those not at home, it was 36 percent. Unexpectedly, both treatments were comparably effective. The impressions given by household members personally contacted caused an overexpectation of likely returns. On the other hand, the returns from those households receiving the notice of a visit and a questionnaire was not expected to have, as it did, a return rate higher than the second mailing of the mail-out portion of the survey.

Costs

Accurate accounts were made of all labor and material costs associated with each procedural stage of the data collection. Table 4 gives the cost accounts for each stage by items of expense. The initial sampling and listing of case addresses were charged to the initial mailing stage. As noted, labor time was converted at the rate of $3.00 per hour.

The overall survey cost for data collection was $541 with an average cost per return of $1.78. As shown, the cost if only the personal follow-up had been used was $1.91 on the basis of a projected overall return of 71 percent. If a telephone follow-up, supplemented by a third mailing, had been used, the overall return rate would likely have been comparable but somewhat lower in cost. On the basis of the cost and return data obtained, a similar survey combining the use of all these procedures for economy and effectiveness could be conducted as follows: initial mailing; postcard reminder; second mailing; postcard reminder; telephone call reminders supplemented by a third mailing of the questionnaire, cover letter, and return envelope; and a simplified personal follow-up.

Whatever combined approach is selected for following up a mailed survey, a certain degree of nonresponse can be expected even when interview follow-ups are used. For example, the mail surveys conducted by the U.S. Bureau of Census were followed up by

Table 1. Dwelling unit characteristics of initial sample.

Dwelling Unit	Survey Sample (N = 454)	1970 Housing Census (N = 22,188)
Lafayette	71.8	70.1
West Lafayette	28.2	29.9
1-unit structure	69.8	65.5
2 or more units	30.2	34.5
Owned	59.7	62.2
Rented	39.2	37.8
Undetermined	1.1	—

Table 2. Survey response by procedural stage.

Number	Procedural Stage	Number	Number of Returns	Return Rate (percent)	Percentage of Total
1	Initial questionnaire mailing	454	115	25.4	37.8
2	Postcard reminder	339	78	23.0	25.6
3	Second questionnaire mailing	261	47	18.0	15.5
4A	Personal follow-up	105	40	38.1	13.2
4B	Telephone follow-up	104	24	23.1	7.9
—	All stages	—	304	67.0	100.0

Table 3. Dwelling unit characteristics of telephone and personal follow-up groups.

Dwelling Unit	Telephone Follow-Up	Personal Follow-Up
Total	104	105
Lafayette	75	75
West Lafayette	29	29
1-unit structure	70	66
2 or more units	34	39
Owned	51	50
Rented	50	53
Undetermined	3	2

Table 4. Data collection costs by stage.

Item	Initial Mailing	Postcard	Second Mailing	Telephone Calls	Personal Visits	All Stages
Materials	41.00	7.00	21.00	1.50	5.50	76.00
Mailing expenses	81.00	23.00	42.00	3.00	6.00	155.00
Office work[a]	42.00	9.00	18.00	36.00	—	105.00
Collectors[a]	—	—	—	—	75.00	75.00
Travel expenses	—	—	—	—	10.00	10.00
Supervision[a]	60.00	12.00	15.00	9.00	24.00	120.00
Total Cost	224.00	51.00	96.00	49.50	120.50	541.00
Returns	115	78	47	24	40	304
Return rate (percent)	25.4	23.0	18.0	23.1	38.1	67.0
Cost per return	1.95	0.66	2.04	2.06	3.01	1.78
Cumulative cost per return	1.95	1.50	1.58	1.63[b]	1.91[b]	—

[a]Time accounts converted at the rate of $3.00 per hour. [b]Based on projected return.

both telephone and personal interviews (14). The nonresponse to these surveys ranged from 17 to 24 percent. Similarly, the Hochstim and Athanasopoulos study still had 14 percent nonresponse after an interview follow-up (9). This same degree of nonresponse is typical of that expected in complete interview surveys that do not use substitution (15). In most cases, approximately 15 percent nonresponse could be expected when typical follow-up techniques are used. If a mailed survey obtained 50 percent return and a telephone reminder obtains another 15 to 20 percent, approximately 40 to 50 percent of the remaining sample is still not likely to respond. The decrease in the expected return rates at the later follow-up stages makes the cost of the follow-up a more determining factor in its use at these stages. In some cases, combining the telephone call with the more economical simplified personal follow-up might be a more acceptable alternative than an interview follow-up in view of the expectedly low return rate and the high cost of interviews.

Respondents and Nonrespondents

Comparison of the survey respondents and nonrespondents was made basically to determine how the survey respondents, after each procedural stage, compared with the sample enumeration on selected characteristics; what significant differences in selected characteristics existed between the respondents and nonrespondents; and whether any of the selected characteristics were associated with the wave of return. Table 5 gives a summary of the response after each procedural stage of the selected individual and household characteristics. Also, available enumeration values of the characteristics for either the sample or the study population are given for comparison. Some of the values given in Table 5 are proportionally different from the enumeration by less than 10 percent [(percent difference/enumerated percent) × 100 percent < 10 percent]. Before making more detailed statistical comparisons, this 10 percent criterion will be used for cursory comparisons.

The total survey returns were reasonably comparable to the enumeration values on the variables of sex, city, occupational SES, and type of dwelling unit structure. Sex and city were the only variables within 10 percent after each stage. The bias on age and homeownership was consistent over all stages. The categorical distributions of returns on household composition and number of persons were also similar for each wave of return. The differences between early and late respondents were reflected in characteristics such as sex, education, resident time, and occupational SES.

For considering survey response and the selected characteristics more specifically, two statistical analyses were performed with the data. These were a comparison of survey respondents and nonrespondents on selected characteristics, and a test of association between the wave of return and the selected characteristics.

Chi-square (χ^2) was used as the test statistic for significant differences from what would be expected from the hypothesis of equal proportionality. The level of confidence chosen for rejecting the equal proportionality hypothesis was the 0.10 probability level.

The strength of associated differences was measured by using the nonparametric statistic, Cramer's V, which is defined as

$$V^2 = \frac{\chi^2}{N \min \begin{pmatrix} r - 1 \\ c - 1 \end{pmatrix}}$$

where $\min \begin{pmatrix} r - 1 \\ c - 1 \end{pmatrix}$ is the minimum value of either the rows or columns minus one. This statistic takes on values ranging from 0 to 1, for no association to a perfect association respectively and accounts for unequal rows and columns. Even though values of Cramer's V between 0 and 1 do not have much intuitive meaning, the statistic does serve as a comparative indicator of the strength of different associations.

Table 6 gives the survey respondents and nonrespondents by the characteristic variables enumerated for the sample. As shown, the respondent group had proportionally a larger number of long-time residents, homeowners, and persons living in single-unit

Table 5. Cumulative survey response by selected characteristic.

Characteristic	Initial Mailing (N = 115)	Postcard Reminder (N = 193)	Second Mailing (N = 240)	Telephone, Personal Follow-Up (N = 304)	Enumeration (N = 454)
Individual					
Age (years)					
21 to 34	34.0	33.2	35.8	34.9	40.8[a]
35 to 54	33.0[b]	31.1[b]	29.6	31.3[b]	33.4[a]
≥ 55	33.0	35.7	34.6	33.9	25.8[a]
Sex					
Male	53.0[b]	45.3[b]	45.8[b]	45.7[b]	50.2[a]
Female	47.0[b]	54.7[b]	54.2[b]	54.3[b]	49.8[a]
Education (years)					
< 12	12.2	13.4	16.1	14.5	—
12 to 15	40.0	44.7	43.4	47.4	—
≥ 16	44.3	39.4	38.0	36.1	—
Not reported	3.5	2.5	2.5	2.0	—
Resident time (years)					
≤ 10	44.4[b]	35.9[b]	36.5	33.7	47.1[c]
11 to 29	26.0[b]	27.2[b]	29.1[b]	32.3	27.8
≥ 30	29.6	34.8	34.3	34.0	25.1
City					
Lafayette	67.8[b]	71.5[b]	72.1[b]	72.0[b]	71.8
West Lafayette	32.2	28.5[b]	27.9[b]	28.0[b]	28.2
Household					
Occupation (head)					
High SES	40.9	34.7	32.9	30.7[b]	27.8
Middle SES	30.4[b]	33.6[b]	33.7[b]	33.9[b]	33.9
Low SES	14.7	15.5	17.1	18.7[b]	20.7
College student	6.1	6.7	7.5	7.8[b]	8.4
Retired	7.0[b]	6.3	7.9	8.2	6.8
Undetermined	0.9	1.0	0.8	0.7	2.4
Composition					
Single	11.5	12.6	13.9	13.9	—
Married, no children	29.2	30.9	31.1	31.5	—
Married, with children	53.1	48.7	47.9	47.0	—
Other	6.2	7.9	7.1	7.6	—
Number of persons					
1	13.0	13.5	14.6	14.5	—
2	30.4	35.2	34.6	34.9	—
≥ 3	56.5	51.3	50.8	50.7	—
Dwelling unit					
Owned	66.1	70.5	70.0	65.8	59.7
Rented	33.9	29.5	30.0	33.9	39.2
Undetermined	—	—	—	0.3	1.1
1-unit structure	75.7[b]	76.2[b]	75.0[b]	72.7[b]	69.8
2 or more units	24.3	23.8	25.0	27.3[b]	30.2

[a]Values are from the 1970 Census of the Population for the study cities. All other values are from the transportation study data.
[b]Values are proportionally different from the enumeration by less than 10 percent.
[c]Includes the resident time of the head of the nonresponding households.

Table 6. Respondents and nonrespondents by enumerated characteristics.

Characteristic	Total Respondents (N_a = 304)	Non-Respondents (N = 150)	χ^2 Test of Significant Difference (p)	Cramer's V
City				
Lafayette	72.0	71.3	NS[a]	—
West Lafayette	28.0	28.7		
Resident time (years)				
≤ 10	33.7	68.5[b]	0.0001	0.34
11 to 29	32.3	21.5		
≥ 30	34.0	10.0		
Occupation (head)[c]				
High SES	37.1	26.7	NS	—
Middle SES	40.5	42.5		
Low SES	22.4	30.8		
Dwelling unit				
Owned	66.0	48.6	0.001	0.17
Rented	34.0	51.4		
1-unit structure	72.7	64.0	0.07	0.09
2 or more units	27.3	36.0		

[a]Not significantly different at the 0.10 level of confidence.
[b]Resident time of head of nonresponding households.
[c]Respondents = 254; nonrespondents = 111.

dwellings. The nonrespondents were more likely to be short-time residents, renting, and living in multiple-unit structures. These three characteristics are probably highly correlated with each other. The groups were comparable on city location and showed typical high and low SES differences.

The Cramer's V measure of the strength of the association indicates comparatively that resident time in the community was the most distinguishing characteristic between the respondents and nonrespondents of those considered. The mean resident time of the respondents was 23.4 years; for the nonrespondents, it was 7.35 years. Within the 10-years-or-less category, 74 percent of the nonrespondents had been in the community for only 3 years or less, whereas only 43 percent of the respondents within this category had resident times of 3 years or less.

The association between survey response and resident time was further examined by using the other characteristics as test factors, or controls, to see if the association was conditional on any of these variables. Table 7 gives the survey respondents and nonrespondents by resident time controlling on occupational SES, tenure, type of structure, and city. As shown, the association was still statistically significant for all the subgroups and comparable in strength to the original association. These results reinforce the conclusion that the resident time in the community has a more dominant influence on the response to a mailed community-related questionnaire than any of the other variables considered. Also, as shown by the relative values for Cramer's V given in Tables 7 and 8, target populations low on SES and short on resident time will likely be the most unresponsive group to a mailed community questionnaire.

The association of survey response and resident time is not considered surprising. It merely reinforces the common-sense notion that community interest and awareness are likely to be higher among long-time residents than they are among recent arrivals. Linking longer resident time with increased community awareness and survey response would reinforce the findings of past mail-survey research that the interest in the survey subject matter is the strongest determinant of response.

Although the characteristics given in Table 9 were found to have statistically significant associations with the wave of return, all the associations were comparatively weak as reflected by the values for Cramer's V. The practical significance of these results is only that the bias in mail returns is more likely to be on these characteristics than the others considered, and the use of the nonmail follow-ups helped reduce these biases. For example, the respondents to the nonmail follow-ups were significantly different (χ^2 probability is less than 0.10) from the respondents to the mail-out portion on education, resident time, occupational SES, and homeownership.

In summary, the sample returns were found to be underrepresentative of the younger age group (21 to 24 years old), males, short-time residents, renters, and persons living in multiple dwelling unit structures. The returns were overrepresentative of the older age group (55 years old and more), females, long-time residents, homeowners, and persons living in single-family dwelling units. The differences between respondents and nonrepondents on city and occupational SES were less than those cited previously. The most significant difference found was on resident time with shorter time residents showing the greatest degree of nonresponse of any group considered.

Technically speaking, the bias found in the sample returns on some of the sociodemographic characteristics could be crucial for surveys having an explanatory or analytic purpose of inferring behavioral variables from attitude data. Planning surveys seeking attitude or opinion data about what residents perceive to be the major sources of dissatisfaction within a community subject area have more of an informative than an explanatory purpose. Primary to the consideration of using the mail-survey approach for this informative purpose is assessing how much information is lost because of nonresponse and to what degree the information obtained is peculair to the characteristic nature of the respondents. From the opinion data collected in this study, one cannot determine if, or how strong, a relation might exist between a group's reactions to its community environment and its sociodemographic characteristics. The data gathered, however, are considered of sufficient scope and detail to make some assessment on how crucial the nonresponse bias is to the informative survey purpose.

Table 7. Survey response by occupational ranking.

Resident Time (years)	High SES		Middle SES		Low SES		Owners		Renters	
	R	NR	R	NR	R	NR	R	NR	R	NR
≤ 10	48.3	81.3	28.7	60.8	10.7	66.7	25.6	50.7	50.5	89.2
11 to 29	34.8	15.6	33.7	33.3	46.4	16.7	34.9	39.4	27.5	5.4
≥ 30	16.9	3.1[a]	37.6	5.9	42.9	16.7	39.5	9.9	22.0	5.4
N(100 percent)	89	32	101	51	56	36	159	71	95	74
$P(X^2)$/Cramer's V	0.005/0.30		0.0001/0.38		0.001/0.58		0.0001/0.30		0.0001/0.41	

[a]Expected cell frequency less than 5.

Table 8. Survey response by dwelling unit and location.

Resident Time (years)	1-Unit Structure		2-Unit Structure		Lafayette		West Lafayette		Total	
	R	NR	R	NR	R	NR	R	NR	R	NR
≤ 10	27.6	61.5	51.4	81.1	25.2	60.4	57.1	88.4	33.7	68.5
11 to 29	35.9	26.0	21.6	13.2	35.5	27.4	23.4	7.0	32.3	21.5
≥ 30	36.4	12.5	27.0	5.7	39.3	12.3	19.5	4.7	34.0	10.0
N(100 percent)	217	96	74	53	214	100	77	43	304	150
$P(X^2)$/Cramer's V	0.0001/0.33		0.002/0.32		0.0001/0.36		0.002/0.31		0.001/0.34	

Table 9. Wave of return by selected characteristics.

Characteristic	Wave of Return (percent) 1	2	3	4	N	χ^2 (p)	Cramer's V
Sex					304	0.06	0.16
Male	53.0	33.0	48.9	45.3			
Female	47.0	66.7	51.1	54.7			
	100.0	100.0	100.0	100.0			
	(115)	(71)	(47)	(64)			
Education (years)					298	0.01	0.17
< 12	12.6	15.4	27.7	8.1			
12 to 15	41.4	52.6	38.3	62.9			
≥ 16	45.9	32.1	34.0	29.0			
	(111)	(78)	(47)	(62)			
Occupation (head)					254	0.10	0.14
High SES	48.0	30.6	30.8	28.3			
Middle SES	35.0	48.4	41.0	41.5			
Low SES	17.0	21.0	28.2	30.2			
	(100)	(62)	(39)	(53)			
Resident time (years)					304	0.10	0.14
≤ 10	44.4	35.9	36.5	33.7			
11 to 29	26.0	27.2	29.1	32.3			
≥ 30	29.6	34.8	34.3	34.0			
	(115)	(78)	(47)	(64)			
Dwelling unit					303	0.02	0.19
Owned	66.1	76.9	68.1	50.8			
Rented	33.9	23.1	31.9	49.2			
	(115)	(78)	(47)	(63)			

Note: Numbers in parentheses are the actual number of returns.

CONCLUSIONS

The conclusions that were drawn from the results of this study are as follows:

1. The combined use of mailed questionnaires with follow-up procedures is an economical approach for obtaining subjective opinion data from the general public.
2. For planning surveys seeking residents' subjective opinions about their community environments for informative uses, the bias due to nonresponse may not result in any serious loss of information if greater than 60 percent return is achieved.
3. A mailed-out community-related survey is not likely to achieve much more than 50 percent response unless nonmail follow-up procedures are used.
4. The combined successive use of a telephone and simplified personal follow-up to a mailed community survey is likely to be comparable to an interview follow-up on the basis of the cost versus the information obtained.
5. Respondents to a community-related mail survey are more likely to be old, long-time residents owning a single-unit dwelling than are nonrespondents.
6. The use of nonmail follow-up procedures in a mail survey can help reduce the typical SES bias found in the response to a mail survey.
7. The response to a community-related mail survey is likely to be more strongly associated with the respondent's resident time than it is with his age, sex, SES, family status or size, tenure, or type of dwelling unit.

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APPENDIX

FINAL QUESTIONNAIRE DESIGN

GREATER LAFAYETTE

COMMUNITY IMPROVEMENT STUDY

DIRECTIONS: Most of the following questions can be quickly checked or filled-in. Others allow you to answer in your own words.

(1) First, we would like to know how long you have lived:

a. in the Lafayette area? ___ yrs.

b. at your present address?___ yrs.

(2) How long do you expect to live in the Lafayette area?

[] Indefinitely [] At most, only a year

[] Only a few years [] Don't Really Know

All cities seem to have their good and bad points.

(3) First, what features of the Greater Lafayette area do you *like* the most?

_____

_____

_____

_____

[] No Opinion

(4) Listed below are some major categories in which local improvements might be made. Please check(✓) the three (3) categories in which *you* think the Lafayette area needs the *most* improvement.

[] 1. Community Appearance
[] 2. Education
[] 3. Environmental Protection
[] 4. Health Care
[] 5. Housing
[] 6. Local Economy
[] 7. Local Government
[] 8. Public Assistance
[] 9. Public Safety
[]10. Public Utilities
[]11. Recreation
[]12. Transportation
[] No Opinion

(5) Are there particular facilities, services, or conditions you would like to see improved within *any* of the categories above?

[] Yes [] No [] Don't Know

a. *If "Yes",* what improvements would you like to see made?
(Please write your answer(s) in the spaces below)

1. In Category No. __, *I would like to see*_____
_____
_____

2. In Category No. __, *I would like to see*_____
_____
_____

3. In Category No. __, *I would like to see*_____
_____
_____

4. In Category No. __, *I would like to see*_____
_____
_____

b. *If* you suggested *more than one* improvement above, which *one* would you like to see done *first?*

Suggestion No. ___

(6) Listed below are some specific items of local concern.

How *important* do you think each of these items would be for *improving the Lafayette area?*

(Please circle your answer for each item)

	Very Important	Somewhat Important	Not Very Important	Not Important At All	Don't Really Know
a. Public parking garages downtown	1	2	3	4	DK
b. Combining City-County services: parks, police, fire, sewage, etc.	1	2	3	4	DK
c. Expanding the County park system	1	2	3	4	DK
d. Establishing an area-wide vocational high school	1	2	3	4	DK
e. Expanding and improving the bus service	1	2	3	4	DK
f. Increase the supply of public housing	1	2	3	4	DK
g. Developing the Lafayette riverfront as a park area	1	2	3	4	DK
h. Relocating the downtown railroads	1	2	3	4	DK
i. Downtown urban renewal	1	2	3	4	DK
j. Building wildcat reservoir	1	2	3	4	DK
k. Other _____	1	2	3	4	DK

(7) Now, think for a moment about your part of town.

If the local city government could spend alot of money on a new program to improve your neighborhood, what do *you* think they should spend it on?

_____

_____

In a community-wide survey, a statistical check must be made to insure that all kinds of people have participated. We ask you to complete the following questions to make such a check possible.

- Your age bracket is:

  [] Under 25 yrs. old [] 35 to 44 [] 55 to 64
  [] 25 to 34 [] 45 to 54 [] 65 or over

- You are a: [] Male [] Female

- The years of education you have completed:

  (Please Circle One)

Grade School			High School				College, Business, or Trade				
6 or less	7	8	9	10	11	12	13	14	15	16	17 or more

- The number of persons living in your household is: ____

- Their relationship to you is:

_____

(e.g., wife, husband, son, daughter, brother, uncle, etc.)

- The occupation of the head of your household is:

_____

(e.g., clerk, machinist, typist, sales manager, fireman, etc.)

If you have any further suggestions for improving the Lafayette area, please write them below.

_____

_____

We Thank You For Your Help