SURVEYING ALIENATION AMONG METROPOLITAN BLACKS

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Introduction

Survey research methods have become increasingly sophisticated as a means to make generalizations about a total population. In the survey design, sampling is an integral part. Sampling is one of the most technical areas of the survey design and it is often possible to reduce the size and cost of surveys by using complex sample designs.

Despite the greater sophistication of survey research methods there seems to be a growing reluctance on the part of the public to participate in surveys as well as an increasingly critical attitude about the quality of surveys. There is an increasing use of surveys to gather information about people, farms, businesses, the effects of social and educational programs, the way people perceive political candidates, and many other matters.

In a 1978 report by Barbara Bailar and C. Michael Lanphier entitled, Development of Survey Methods to Assess Survey Practices, the authors note that:

> In 1973, the American Statistical Association (ASA) under a grant from the National Science Foundation (NSF) convened a conference on Surveys of Human Populations. The primary purpose of the conference was to explore some of the problems of survey research and determine whether they were becoming serious obstacles to the use of surveys in social science research. (p.1.)

Bailar and Lanphier further note that:

> The conference participants included distinguished social scientists and survey methodologists with diverse backgrounds. A report of this conference published in the February, 1974 issue of The American Statistician, concluded that survey research is in some difficulty, that the difficulties may be increasing, and that the problems vary in incidence among government, private, and academic researchers. (p.1.)

In order to address the problems seen developing in survey research, a pilot study was designed to assess survey practices. Among the concerns of the pilot study was the question of sample design, that is, the details of sampling (including nature of the target population), sampling strategy, frames, techniques (including probability sampling methods), and difficulties encountered in sampling. Observations made from the 36 surveys in the pilot study noted that the samples were, for the most part, poorly designed. It was noted that very little documentation existed as to sampling procedures. Further, a majority of the designs featured clustered samples, but only four surveys correctly accounted for the effect of clustering on variances.

The purpose of this paper is to focus on a survey design for studying alienation among metropolitan black adults. In looking at the survey design, particular attention will be paid to the sampling design used for selecting specific black households and specific black respondents within the household. This is of particular concern in that problems generally associated with surveys are exacerbated with surveys among metropolitan black households.

In late 1976, The Solomon Fuller Institute[1] received a research grant to conduct a 12-month pilot study in metropolitan Boston on "Health Needs, Priorities and Alienation Among Blacks." Survey methods were the primary data-gathering mode in the pilot study. The sampling design consisted of selecting black households in metropolitan Boston which could yield 240 useable interview schedules.

The starting point for the sample of households in Boston was the 1970 U.S. Census on Population and Housing. As noted by Nathan Keyfitz[2] (1979) statisticians and demographers use the census to obtain information. It is recognized by statisticians and demographers that for information purposes, the census is not exact, nor is exactitude necessary. The census also serves an allocation purpose. For this use exactitude is still impossible, but it is more essential.

As Keyfitz notes:

> Far from being able to count the population of the United States to the last person, we cannot count it to the last million persons. Omissions in each of the censuses of 1950, 1960, and 1970 are estimated at more than 5 million persons despite the effort and expertise applied. (p. 45.)

The U.S. Census Bureau has estimated that of the 5.3 million persons omitted in 1970 some 3.4 million were white and 1.9 million nonwhite.[3] The percentage of whites omitted was 1.9, and of nonwhite 6.9. The Census Bureau recognizes that nearly four times as large a fraction of nonwhites as of whites being omitted is the major issue of underenumeration, and the Census Bureau is concentrating much of its additional effort in 1980 on the areas where minority persons live. Among nonwhites, blacks are the group with the largest proportionate underenumeration.

Keyfitz estimates that with effective administration, an expenditure of $200 million would probably permit locating and counting 90 percent of the population; $400 million might count 95 percent; $800 million might perhaps count 98 percent. As one moves toward persons harder to find, the cost per person goes up steeply. The same logic applies to designing a sampling process to yield a certain number of black adults. For with the census as a starting point for sample design, black household selection is even more problematic than for white household selection.

Further, no satisfactory way of adjusting the census is available. Even so, the differential completeness of racial groups makes the unadjusted figures unacceptable. One proposal for making such an adjustment is based on the number of blacks in a local jurisdiction by applying the relative incompleteness ratio for the United States. The use of this proposal in the 1970 U.S. Census would have multiplied the number of blacks by about 1.05 to bring blacks up to the incompleteness of whites. This synthetic, office calculation cannot make up for shortcomings in field work.

In addition to the problem of underenumeration, black household sample design is further hindered by the obsolete nature of some census tract population figures based upon the 1970 census. There are some urban census tracts that have undergone rapid change from predominantly white to predominantly black since 1970. These changes are often not only manifest in terms of a turnover in racial composition, but also in terms of an increase in the vacant housing stock.[4]

Sample Design

Taking into account underenumeration, census tract population changes, and changes in the housing stock, the pilot study of black households in metropolitan Boston approached sample design cautiously. In Boston, the communities of Roxbury, Dorchester and Mattapan contain about 93 percent of all blacks residing in the metropolitan area. These three communities were thus used to select the sample of urban black households. The Newton-Brookline suburb was selected because these two areas contain the largest proportion of suburban black households in the Boston metropolitan area. No suburb of Boston contains a black population which approaches the national average of slightly less than 5 percent of blacks who reside in suburban communities.[5]

The sampling design for urban Boston incorporated the following assumptions and constraints:

a. Block selection was proportionate to the population of the block based on the 1970 census. Blocks that have changed dramatically in population since 1970 were either over or under represented.

b. Specific household addresses were not known in advance until the interviewer went to the block and counted the housing units.

c. Estimates were made for area populations, number of households where no contact could be made for screening, and response rate in order to determine the number of blacks and housing units needed in order to produce sixty interviews in each area. These assumptions are indicated in Table 1.

d. The sample was clustered with six housing units selected per block. As noted earlier, clustering effects variances.

For Roxbury, Dorchester, and Mattapan a set of block maps were produced which directed field interviewers to randomly selected blocks in these areas. For each block there was indicated (1) a randomly selected corner from which to start counting, (2) instructions on how many housing units to count, and (3) indications of the households which would fall into the sample. Thus for each of these three areas, once the interviewer reached a randomly selected corner they would proceed in a clockwise direction and count 10 housing units (HUs). Also provided in the sample design was a formula for calculating the probability of selection for each area. These probabilities were different for each area. See Table 1 for this formula.

The urban and suburban areas selected in metropolitan Boston for the pilot study contain approximately 97 percent of the black population in the metropolitan area. For cost and efficiency purposes, the remaining 3 percent stood outside the sampling frame. It was felt that this group did not differ significantly from those included in the frame in order to warrant sampling of this "rare" population. A rare population group is considered here to be one which consists of less than three percent of the total population.[6] According to Levy (1977) the problem of locating members of rare population groups by sample survey to estimate their characteristics has received recent attention among survey statisticians. Sudman (1972) suggested the use of stratification, Bayesian optimum allocation, and sequential analysis to increase cost efficiency. Sirken (1970) on the other hand, had developed a theory of network sampling as a tool for measurement of characteristics in rare populations, and he has used it in a wide variety of applications.

The Brookline-Newton suburbs contain a black population approaching 3-5 percent of the total population based upon the 1970 census. For these areas, a combination of block maps with counting schemes were used in blocks with a large enough black population to make household screening cost effective. In other areas, listings of black households were developed with local clubs and organizations and a probability sample derived from the listings. These sampling procedures in metropolitan Boston yielded 174 black adult household interviews in Boston and 63 in Brookline-Newton. The overall response rate was 65 percent.

The Solomon Fuller Institute received funding to replicate the Boston area study in four other U.S. cities. This 12-month grant covers the period January 1, 1979 - December 31, 1979, and includes Atlanta, Cleveland, Houston, and Los Angeles. In these four study sites to date, sample selection has taken place, interviewers have been trained, and the field work is underway. It is expected that data reduction and analysis activities will begin in late summer to early fall.[7]

In each of these metropolitan areas the greater proportion of black households are located in the urban area. Suburban sample selection is of concern also in that the study focus is on urban-suburban comparisons across several measures. The Boston area pilot study yielded an urban-suburban ratio of 3 to 1, and this ratio is to be maintained in the four-city study. In

TABLE 1
Assumptions Used in Determining Sample Size

	Population	HU's	% Black	# C.S. needed for 60 interviews*	Rate	Cluster Size	# Blocks	Interval
Mattapan	20,000	6,250	60%	165	1/38	6	28	228
Roxbury	60,000	18,750	70%	149	1/126	6	25	756
Dorchester	70,000	21,875	60%	165	1/133	6	28	798

*(# Initial C.S.) x Households = (total - vacancy Business addresses) x (Rate of Contact for Screening) x (% Black) x (Response Rate) = No. of interviews

*(# Initial C.S.) x .90 (Mattapan, Dorchester) .85 (Roxbury) x (.90) x .60 (Mattapan, Dorchester) .70 (Roxbury) x (.75) = 60

each site, 200 black adults are to be interviewed.

In each of the four metropolitan areas the initial sampling step was to review and update where possible block-by-block and census tract social, economic, and labor force characteristics of the population based upon the 1970 U.S. Census. Information on the status of housing units was also reviewed. Police census, county census, state census, and local studies on the housing stock and population trends were utilized in the review and update. A review of census tract data in order to update it is necessary in order to derive as exact a notion as is possible about the percent of blacks in a particular neighborhood, and thus pave the way for designing a probability of selection to guide the random sampling.[8]

In Atlanta block maps with a randomized counting scheme were developed in order to select the housing units (HUs) to be included in the sample. Boston and Houston also produced block maps based upon a formula for determining the probability of selection for each area, with a key variable in the formula being percentage black. In Cleveland block maps and specific addresses were produced in the sampling design. Los Angeles produced a listing of addressed by focusing on those urban and suburban census tracts with 60 percent or greater black population. Thus in metropolitan Los Angeles, the suburban census tracts with 60 percent or greater black population yielded tracts in Carson, Compton, Pomona, and San Fernando Valley. Cleveland, for example, included only Shaker Heights as the suburban area sampled.

In addition to a sampling design focusing on census tracts, blocks, and housing units (HUs), the Kish selection method was used in selecting a specific adult respondent in the household. This method was used in order to provide an equitable distribution of respondents by age and sex. This procedure does pose certain difficulties since only one specific adult can be interviewed at a given address and the interviewer's task is thus complicated if the respondent is not at home at the time of the call.

An issue to keep in mind in designing the samples described in the five cities is that some relatively small percentage of the black population is excluded. Those excluded tend to be rare populations, that is, blacks in an area in which they are less than three percent of the population. Data interpretation needs to take this factor into account. Sampling rare populations tends to be more expensive than "non-rare" populations in that rare populations are harder to find and the cost per person goes up steeply.

The non-response rate in Boston of 35 percent is also a problematic issue. This issue is related to the unwillingness by the public to participate in surveys, a problem which is perhaps even more acute in black communities. This issue is also related to other factors such as number of children in the household, employment-unemployment, and the labor force role of women. These factors all have a relationship to the sample design.

Possible Errors

In designing a sample of metropolitan black households it is important to keep in mind the possible errors. Possible sources of error include (a) census underenumeration of blacks in the range of five to seven percent, (b) the obsolete nature of some census tract figures in areas of rapid racial change, (c) sampling errors which have the favorable characteristic of being controllable through the size and design of the sample, and (d) sampling biases which includes human failures such as wholly omitting an occasional sample area or household that presents difficulties, biases of the estimating procedures, and bias arising from a failure to randomize the starting points in a systematic selection.

Census underenumeration of 5-7 percent of the black population virtually assures that any sample of black households will have a substantial number of households standing outside the sampling frame. This is a form of non-response that is different in character from the concept as it is normally applied. However, the effects on measurement can be similar. That is, how do these 5-7 percent of the black population compare with those who are counted and what estimators can be used to describe the missing group?

The obsolete nature of some census tract information implies that a sample survey in these areas must spend a little more in order to update the figures. If the expenditure is not made

up front, serious problems could result in designing the sample and in the resultant measurement phase. Measurement error as a source of bias can have substantial effects. Measurement error creates bad data which can be a serious source of bias.

Sampling errors, even for small samples, are often the least of the errors present given that the frame has been adequately defined. It is possible to lay out sample designs in many types of surveys whereby a person can state in advance the width of a band that will contain 99 percent, or any other percent, of the sampling errors.

According to Williams (1978) selection bias can occur when sample units are thought to have been drawn into the sample with one set of probabilities but are actually drawn in with a different set of probabilities.

> Such a difficulty can be associated with a failure to implement a sampling design properly or with the specific problem of nonresponse. (p. 62.)

Detection of selection bias can be accomplished by reviewing the sampling process to determine if the sample was indeed selected according to the design specifications. The best analytic method to seek out possible selection biases is to compare the sample with outside data. In instances where the sample is out of line with the population, correction techniques such as weighting can be introduced. While reweighting data is fairly straightforward, it is not always possible because appropriate data may not be available. Comparison of sample estimates and the response rates is another method for seeking selection biases. In household surveys it seems to be consistently true that the estimated number of children is related to the response rate. That is, people with fewer children are home less than those with more children. Also, in the Current Population Survey (CPS) unemployment estimates are related to response levels.[9]

Tentative Findings

In terms of measuring alienation among metropolitan blacks the only findings now available are from the Boston area pilot study. Data from the other four cities will not be available in published form until early in 1980. The pilot study utilized the nine-item Anomie Scale developed by McClosky and Schorr (1965), and the Alienation Scale employed by Dean (1961). The Dean Alienation Scale comprised three components, (1) a measure of powerlessness composed of nine items, (2) a measure of normlessness consisting of six items, and (3) a measure of social isolation comprised of ten items. Respondents were classified as low, medium, and high for each of these measures, depending upon the score obtained. The scoring was done precisely as done by McClosky and Schorr and Dean.

The most statistically significant findings are that (1) high goal attainment implies a low sense of anomie, and low goal attainment implies a high sense of anomie, (2) both higher levels of anomie and alienation imply a greater concern for micro-community issues, (3) those who distrust the white power structure tend to be characterized as more alienated, powerless, normless, and socially isolated, (4) low goal attainment implies a greater sense of alienation and social isolation, and (5) the young age group is characterized by a greater sense of anomie and alienation and tend to voice a greater concern for micro-community issues.

In terms of correlations, the measures of anomie and alienation have the following relation to other key variables. Health care access has its largest negative correlation with normlessness and social isolation. Anomie has its largest positive correlation with social isolation, and its largest negative correlation with orientation to the future and distrust of the power structure. Alienation has its largest positive correlation with social isolation and normlessness.

Conclusion

Sampling design for black households remains a problematic area. This is an area of concern for academic researchers, market researchers, and media researchers involved with program ratings and audience share. This paper is an attempt to address the issue in relation to surveying alienation among metropolitan blacks. The issue is particularly pertinent in areas where blacks are a rare population group, such as in many U.S. suburbs.

Continued work is encouraged in the area of sampling design for black households in order to improve the information base on this segment of the population. However, it should be recognized that the issues of public participation in surveys and survey quality are of critical importance in this effort.

Notes

1. The Solomon Fuller Institute is a non-profit, private research and education organization located in Cambridge, Massachusetts. The pilot study grant was MH-27815 funded through NIMH's Center for Minority Group Mental Health Programs.

2. Nathan Keyfitz, "Information and Allocation: Two Uses of the 1980 Census," The American Statistician, v.33, no. 2, May, 1979, pp. 45-50.

3. Blacks comprise close to 90 percent of nonwhites, thus nearly 1.7 million blacks were omitted in the 1970 census. Therefore, close to 7 percent of the actual black population was omitted in the 1970 census.

4. Barbara Bailar and C. Michael Lanphier note that "Many important problems affecting survey research lie outside the research itself and reflect larger socio-economic problems." (p.2) Rapid racial changes in particular urban census tracts since 1970 have largely been due to "block-busting," while the resultant increase on housing stock vacancy rates has largely been due to "red-lining." These two socio-economic developments make black household sample design problematic for the statistician and survey methodologist.

5. James E. Blackwell, Robert H. Sharpley and Philip S. Hart, "Health Needs of Urban Blacks," The Solomon Fuller Institute Research Report, 1978, p. 15.

6. Paul S. Levy, "Optimum Allocation in Stratified Random Network Sampling for Estimating the Prevalence of Attributes in Rare Populations," Journal of the American Statistical Association, v. 72, No. 36, Dec. 1977, pp. 758-763.

7. Trans-action Books has already expressed a desire to enter into a contract to publish in book form the results of this combined five-city study.

8. In each city, the review and updating work, along with the actual sample selection were carried out in conjunction with university resources. In the respective sites, the University of Massachusetts, Boston, Georgia State University, Houston University, Case Western Reserve University and UCLA, were the institutions involved in sample design. The four city study is also funded by NIMH's Center for Minority Group Mental Health Programs and is grant number MH 32239-01.

9. As Williams notes in "How Bad can 'Good' Data Really Be?" The American Statistician, v.32, no. 2, May 1978, p. 64, in the literature on call-blacks, it seems to be generally agreed that on the first go-around, unemployed persons are easier to find and interview than employed persons. There also seems to be a belief that even after many go-arounds, a hard core of unemployed persons will remain unobserved. In technical terms, the probability of getting a response from an employed person is now higher than from an unemployed person. These factors will definitely effect black household sample selection where the proportion of unemployed and hard core unemployed is greater than for whites.

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