Research on Sources of Undercoverage Within Households[1]

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Keywords: undercount, ethnographic research, residency, complex households

This paper reports some qualitative and quantitative findings from ethnographic studies conducted by Center for Survey Methods Research during the last census to investigate behavioral causes of undercount, and discusses the next stages of research to follow up what is being learned from the ethnographic studies.

In order to investigate behavioral causes of census undercount in the 1990 census, the Census Bureau funded ethnographers at 29 different sites to conduct their own independent enumerations of small areas (including about 100 housing units, usually 1-2 blocks) within 3 months of the census. Their results were compared with census results for the same small areas and the ethnographers conducted followup fieldwork to explain discrepancies between the two enumerations. The sites were chosen purposively to represent undercounted areas and subpopulations, including Blacks, Hispanics, Asians, American Indians, and undocumented. The project was designed to test several hypothesized causes of undercount, including language and illiteracy barriers; concealment of household resources combined with disbelief in confidentiality; unusual housing and household arrangements; mobility; and resistance as a strategy for dealing with outsiders, especially the Government. Sites were chosen in 3 different types of settings: racially or ethnically homogeneous urban settings (11 sites); racially heterogeneous urban or suburban settings (11 sites); and racially homogeneous rural settings (7 sites). (See Brownrigg and Martin, 1989, for the study design, and Brownrigg and de la Puente, 1992.)

The sites chosen for study were high in the factors hypothesized as barriers to census enumeration. Ethnographers who were selected to participate in the project already had established relationships within their communities, typically through ongoing research projects or through connections to social service agencies. An established relationship to the community was required for participation in the project because we believed that community-based researchers would be able to overcome the barriers to cooperation and obtain complete information about the residents of the areas they studied, even when the Census Bureau could not.

Each of the principal researchers submitted a coverage report (for a summary of these, see de la Puente, 1993) as well as their alternative enumerations, data documenting their observations of individuals, households, and neighborhoods, and the results of their resolution of discrepancies between the census and their enumerations. Several quantitative analyses of the data have been conducted and more are underway by staff at the Census Bureau.

This paper focuses on just one of the factors investigated, complex or ambiguous households. At the outset of the ethnographic research, there was evidence that enumeration was be made difficult by the complex and fluid structure of many households. Anthropologists working in Black inner city communities had described the difficulties the Census Bureau had enumerating large, loosely structured domestic units which included both kin and fictive kin, with rather flexible and fluid living arrangements, spread over and moving among several addresses (Hainer, Hines, Martin, and Shapiro, 1988). In such households, people may "live" at two or more addresses simultaneously and enter and leave households frequently and rapidly. There may be disagreement within the household about who is a member and who is not. In such households, it can be very difficult to obtain a complete and accurate enumeration of households.

There are really five different kinds of problems. First, the Census Bureau's rule that one should be counted at ones usual residence (defined as where one lives and sleeps most of the time) may not fit all situations. Some people may not have a usual residence as defined by the Census Bureau, or may have more than one. Second, the instructions and rules on the household roster about who to list may not be understood, or may be ignored by some people. Third, many households are inherently so complex and fluid that it may be difficult to determine who should be enumerated there under any reasonable rule. Fourth, there may be reasons why residents do want to reveal full details about these complex households. Fifth, the nature of some households is such that members may not know, or may not agree, about who lives there.

The ethnographic reports summarized by de la Puente (1993) provide a great deal of detailed evidence about several types of households which

were often enumerated incorrectly. In rural Marion County, Oregon, Martin Dale Montoya describes the complex households that he encountered among Mexican migrant workers as ad hoc households. In such households, relationships are "loosely tied, ephemeral, and alienated (no responsibility to household) because each slot in the household is allocated by money and not necessarily kinship. Housemembers come and go as they please with little concern for the housing unit itself, individual household members or groups" (Montoya 1992: 7).

Montoya argues that Ad Hoc Households are formed as response to poverty. Household members come together not out of familial sense but rather as practical response to poverty and a lack of affordable housing. Ad Hoc Households are very difficult to enumerate. "In the Ad Hoc household, if all members are not present, the likelihood of obtaining the data pertaining to persons outside, asleep, at work, or temporarily absent is virtually impossible. It is as if those persons do not exist. However, even when the number of housemates is determined or provided, the personal data for those other persons is still unattainable. This is because Ad Hoc households protect their identity. This means that coverage of the Ad Hoc household will be determined, to a great extent, by coincidence (who is actually present during the visit) and/or the perseverance of the enumerator" (Montoya 1992: 7).

Similar observations regarding unrelated Hispanic males sharing the same housing unit were made in other sample areas with sizable numbers of recent immigrants. In such situations, the men were often employed and worked different shifts, so that all of them were never in the housing unit at one time. Rather they slept in shifts in living rooms lined with beds. In these overcrowded conditions, the interaction among the unrelated household members was minimal. Getting one household member to divulge information about other members of the household was close to impossible (Dominguez 1992: 9).

In a Long Island, NY sample area, lack of affordable housing prompted low income Salvadoran immigrants to share living quarters with unrelated persons. The researcher describes a subleasing system in which the lease holder of an apartment rents out rooms (or parts of rooms) to unrelated individuals. The result is a household structure that is unstable and impersonal. The "....activities normally associated with households such as cooking and cleaning together, pooling income and sharing meals, for instance, are not exhibited in these households. Rather, individuals fend for themselves or perform these activities in small subgroups apart from the entire group of co-residents. Thus, co-residence is not a proxy here for household in the normal sense" (Mahler 1992: 10).

The leaseholder in these households holds the key to the mailbox and controls the distribution of mail. He or she is also likely to be listed as person 1 on the census form. It is often not in the best interest of the leaseholder to report all household members for fear that the apartment building owner will discover the subleasing arrangement (Mahler 1992: 10-11). In a number of sites, ethnographers found that these ad hoc households protected the identities of those living there. Information was difficult to obtain for this reason, and because in some cases household members did not know the identities of those they lived with.

A similar but different type of household centered around a nuclear core, is described by an ethnographer who conducted field work in the San Francisco, CA sample area. The core was a Salvadoran immigrant couple with their two children. The couple was employed in low wage service jobs, and in order to meet the relatively high rent they rented a three bedroom apartment and took in nine other Salvadoran immigrants to help with the rent. The couple and two children shared one of the three bedrooms. A second bedroom was occupied by a woman and her unmarried male partner, their baby, two children from her previous marriage and her partner's brother. Three recent Salvadoran immigrants occupied the remaining bedroom. Two of the three were unrelated to the core family, but the third person was the father of the wife. As was the case in other sample areas, the interaction among these household members was minimal and impersonal. Each bedroom had a lock and the bathroom and kitchen were shared. The refrigerator was divided into different sections and dry and canned goods were kept in the bedrooms. Of the 13 persons living in this household only 6 were enumerated by the census (Romero 1992: 7).

Complex households also characterized two Haitian sites in Forida, where they are described as densely packed and fluid with a nuclear core (Wingerd 1992:5). In other words, there is usually a core family group with other individuals in the periphery who come in and out of the household depending on their life circumstances. In the Haitian households were often found persons who were described by other household members as "just passing through," who stayed anywhere from two weeks to four years. New arrivals from Haiti were referred to as "just comes" which is the community's term for someone literally just off the boat who has entered the U.S.

undetected, someone just off the airplane who has arrived typically with a tourist or student visa, or someone just released from detention. When there is no relative to stay with, a 'just come' will typically be taken in as a boarder by a friend of a friend where they may stay for an indefinite period of time.

Perhaps the most exotic type of complex household was described in a Harlem, NY area where drug dealing and drug use were commonplace. The ethnographer describes the formation of "freak houses," or households formed on the basis of crack use and sexual services. "The salient characteristic of these households was contained in the 'freak' part of the word: they appealed to male crack users who wanted to 'freak,' or to enjoy the sexual services of many women in an ensemble. Crack using women flocked to them to receive cash or crack, and their proprietors received crack and cash for mediating the exchange" (Hamid 1992: 15).

In addition to the complexity and fluidity of the households themselves, several of the ethnographers attribute coverage errors to different cultural interpretations of family, household, or residence. In New York City and North Beach, CA sample areas, Chinese parents erroneously included their adult children on the census form because it was consistent with the cultural meaning of "family" among Chinese. "In Chinese culture, family members can be dispersed geographically but still be thought of as constituting a household as long as they contribute all or part of their income to get managed by the family head" (Shaw and Guthrie, 1992).

In the Houston, TX, sample site, omissions occurred because heads of households did not view boarders and other unrelated individuals as part of the core household and therefore did not list them on the census form. The researchers maintain that for recent immigrants from Central America and Mexico, "household" and "family" are viewed as the same. Boarders and unrelated individuals are not part of the family and thus not part of the household (Rodriguez and Hagan, 1991).

In a rural Black sample area, the researcher reports that residence has several meanings depending on the circumstances. In formal situations "residence" is where one receives mail. This response would be given to creditors, for example. In informal situations, individuals tend to give the place where they live most of the time as their residence. And Bell notes that "For long-term contact purposes, residence refers to a place which can best be characterized as 'Somebody here knows where I can be found and they won't be moving anytime soon'" (Bell 1991:9).

Gerber (1990) applied the methods of cognitive anthropology to investigate how her informants (who were primarily poor and Black) decide questions of where someone lives. She asked about people's own circumstances, and also asked respondents to discuss different real-life situations. She found that when life circumstances are complex and ambiguous, her respondents used a variety of criteria to (in effect) construct rules for determining residency. The criteria included peoples' intentions and agreements, the location of belongings, and where a person receives mail, which are not part of the census definition. Their calculations may lead people to leave off "marginal" people who should be included. This hypothesis is consistent with Fay's (1989) finding that a marginal relationship within a household was a major predictor of a person being inconsistently reported in the 1980 census and an independent survey in the same household. People in central roles in a household, such as household heads and their spouses, were consistently reported in both the census and the survey, while people with more marginal relationships (e.g., nonrelatives, such as a boarder) were much more likely to be left off either the census or the survey roster. Figure 1 shows the probabilities of being missed, by relationship, separately for Blacks and Whites, controlling for age, gender, tenure, and size of place (from Table 4, Fay, 1989; beta coefficients of logistic models have been transformed into probabilities). Controlling for other

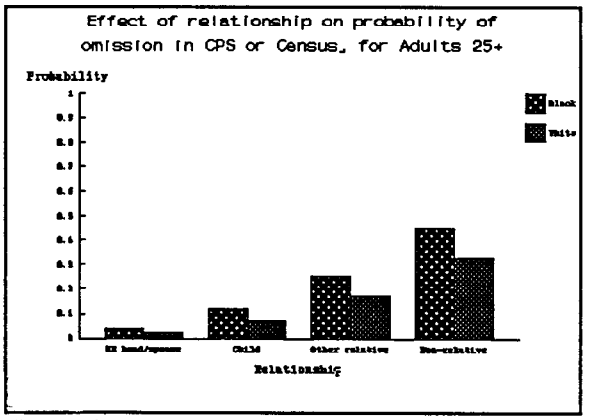

Figure 1

variables, relationship has a greater effect than race upon the probability that a person will be missed from the survey or the census rather than counted in both. For both Blacks and Whites, householders and their spouses were least likely to be missed, and non-relatives were most likely to be missed, with children of the householder and other relatives intermediate in probability of omission. Some of the race differential in survey coverage is likely attributable to race

differences in household structure and composition; Black households include more people in relationship categories which are less consistently included (Fay, 1989).

Table 1 provides estimates of gross census omission and erroneous enumeration rates for the ethnographic sample, by categories of relationship. (These calculations are comparable to dual system estimates.) Consistent with Fay's findings, these results show that gross omission rates increase dramatically for persons in more peripheral relationships, rising from 14.7 percent for householders and their spouses to 44.2 percent for unrelated individuals such as boarders, housemates, and unmarried partners. Gross erroneous enumeration rates also increase for more peripheral relationship categories, but the increase is not as steep, so the net effect is a sharp increase in undercount rates for persons in more marginal relationships. (Recall that sites were purposively selected in areas in which undercount was expected to be high, so these rates are much higher than those characterizing the census generally.)

Table 1
Rates of Gross Omissions and Erroneous Enumerations, by Relationship, for Ethnographic Sample Cases

	Gross omission rates		Gross erroneous enumeration rates		Net undercount
	%	N	%	N	Difference
Householder, spouse	14.7	3563	10.5	3756	4.2
Son, daughter	16.6	2796	10.8	2916	5.8
Other relative	27.9	760	15.0	799	12.9
Nonrelative	44.2	529	16.8	487	27.4
Total	18.8	7648	11.4	7958	67.4

Note: Gross census omissions are calculated as the number of Census Day residents counted by the AE but not census, divided by the number of census day residents counted by the AE. Gross census erroneous enumerations are calculated as the number of persons counted in the census who were not census data residents of the site, divided by the number of persons counted in the census. Cases with missing data on relationship, or for whom residency status on Census Day is uncertain, are excluded from this analysis. Table 1 is based on the 10/92 version of the ethnographic data.

We do not have complete information on people's actual residency patterns over time, either for people maintaining attachments to multiple households or for those moving in and out of the universe of households, because of stays in jail, nursing homes, on the streets, or elsewhere. Such movements among places can lead to omissions or doublecounting in the census and surveys. We do know that patterns of attachment to households and residential mobility are complex and affect the chances of being correctly enumerated in the census. We lack information about how people conceptualize their households and how they determine household membership. Respondents have different cultural categories (from the Census Bureau rules and from each other) and may apply various criteria to decide whom to list. We do not know how respondents or Census Bureau interviewers interpret Census residence rules or if they use them at all to decide who to list. For official purposes, households may be defined in ways which are inconsistent with actual living arrangements.

There is a great deal more to learn from the ethnographic data about the patterns of undercount in different types of households, and analysis of those data are continuing. In addition, in order to learn more about the completeness of household rosters and patterns of attachments to households, the Census Bureau is sponsoring the Living Situation Survey, designed by CSMR and fielded by Research Triangle Institute May-August 1993 (Schwede, 1993). Interviews will be conducted in 1000 households oversampled from areas with high minority or renter populations. The novel features of the LSS include:

- collection of inclusive household rosters, using expanded roster probes. Figure 2 shows the probes being used in LSS to elicit names of all persons with virtually any attachment to sample households. The names are recorded, and screening questions are asked of household respondents to eliminate those who are only casual visitors in the household (because they have a usual home elsewhere and stayed in the sample unit a week or less during the reference period).
- follow up interviews with individual respondents to collect residency data are conducted using calendar-based recall to determine where rostered individuals stayed every night of the 2 month reference period. Information is also collected from individuals about social and economic attachments to households, and access to them (individuals are asked whether their name is on the lease, whether they contribute money, have a key, keep things there, etc.)

Figure 2

SAMPLE ROSTER PROBES IN LIVING SITUATION SURVEY

What are the first names of all the people--

...who stayed here last night?

...who live here but didn't stay here last night?

...who lived or stayed here for one or more nights?

...who you consider to be members of this household?

...for whom you reserved a space or room...?

...who used this address to receive mail or messages?

...who had his or her own key to this place and could come or go at any time?

...who have eaten here frequently?

- subjective measures of residency collected from household respondents and individuals will make it possible to compare proxy and self reports of a person's "usual residence," and will permit comparisons of objective data about where individuals actually stayed during the 2 months reference period with their own and household respondents' determinations of their "usual residence."
- comprehension of terms, such as "live" and "stay" is measured in the survey to determine how people conceptualize residency situations, and to provide information for designing improved roster probes. (Data collected in the survey is to be supplemented by a cognitive study of residency concepts and language; see Gerber, 1993.)

The Census Bureau is considering fundamental design changes in how the Year 2000 Census will be conducted. Two aspects of census design to be reviewed and possibly revised are the residency rules, and questions and methods for eliciting household rosters. One possibility being considered is to conduct a de facto enumeration--for example, by enumerating people wherever they happen to be on the night before census day--but tabulate de jure, by collecting information about where people usually live so that they could be allocated to the appropriate jurisdiction. Another possibility is to collect expanded household rosters and then screen out persons who are not residents of a sample household by asking follow up questions, either as part of the form or in a separate interview. (In a related experimental field test, expanded roster probes increased the reporting of Black males by about 60 percent; Tourangeau, 1993.) Data from the LSS will be used to develop these and other design alternatives to be tested in a program of research and experimentation to improve coverage within households for the year 2000 census as well as other surveys conducted by the Census Bureau. The LSS will be used by the Census Bureau to construct a typology of residency categories, develop estimates (given sample limitations) of the frequency of various residency patterns, simulate (through data analysis) the effects of alternative residency rules, recommend changes to residency rules, and recommend new roster questions and methods for further research.

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ENDNOTE

[1] This paper reports the results of research conducted by Census Bureau staff. The views expressed do not necessarily represent those of the Census Bureau. An earlier version of this paper was presented at the Advisory Committee of the Task Force for Designing the Year 2000 Census and Census-Related Activities for 2000-2009. LeRoy Bailey made helpful editorial suggestions.