

CONSIDERATIONS FOR INCLUDING SPECIAL PLACES IN TELEPHONE SURVEYS

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1. INTRODUCTION

During the past few years both the National Center for Health Statistics (NCHS) and the Bureau of the Census have been exploring the use of the random digit dialed (RDD) telephone survey methodology as an alternative to the face-to-face interview survey. Recently, NCHS has also begun to explore the possible use of the dual frame telephone and face-to-face survey methodology for the National Health Interview Survey. In 1982 a Joint Agency Telephone Survey Task Force was formed to make research and development recommendations for a dual frame NHIS. One of the areas identified for further research was the treatment of "special places" in telephone surveys. The term "special places" refers to places that have been identified by Census as being different from the usual type of living quarters for their face-to-face surveys. Both the Current Population Survey (CPS) and the NHIS have a list of places that are classified as "special places" and the Census interviewers are given special instructions for listing and interviewing at these places. Some examples include group quarters such as college dormitories, rooming houses, boarding houses, and retirement homes. Mobile home parks and trailer camps are also considered special places. Not all of the persons residing in these special places are eligible for the NHIS, since the target population for the survey is the civilian noninstitutionalized population of the U.S. For example, in nursing homes, the resident staff members would be eligible for the NHIS, while the patients of the nursing home would not be eligible.

To date almost all RDD telephone surveys conducted by NCHS, Census, and other survey organizations have treated special places as out of scope, because of operational difficulties in identifying and sampling them over the telephone. By omitting these places, about 3 percent of the nation's population is being excluded from RDD surveys, which creates a possible coverage bias. The Joint Agency Telephone Survey Task Force recommended that the following tasks be undertaken to assess the potential coverage bias of excluding special places and to evaluate the feasibility of surveying special places in RDD surveys:

1. Evaluate the demographic and health characteristics of persons residing in special places.
2. Develop procedures for identifying, sampling, and interviewing special places over the telephone.
3. Develop operational procedures for surveying special places in a dual frame survey.
4. Conduct field tests for surveying special places.

This paper describes the demographic and health characteristics of persons in special places and compares their characteristics to the characteristics of persons not residing in special places.

This paper also presents the results of a preliminary investigation to identify special places in an RDD telephone survey and to estimate the number of eligible sampling units within the special places. These two research investigations were conducted independently.

2. METHODS

The 1981 NHIS was used to analyze the characteristics of persons residing in special places. The analysis included comparisons of persons residing in special places with persons not in special places with respect to demographic characteristics, health characteristics and availability of a telephone within the special places.

The NHIS is a cross-sectional personal visit survey of the civilian noninstitutionalized population of the U. S. The survey is conducted continuously throughout the year with independent weekly samples. Approximately 40,000 households are interviewed each year and demographic and health information is obtained for approximately 108,000 persons within the sample households. The NHIS sample is a multi-stage probability sample with interviews in 376 primary locations throughout the U. S. which are referred to as primary sampling units (PSU). Within the PSU's, a number of geographically clustered segments of approximately four households each are selected for the sample. The sample is selected with a probability proportional to size. Except for subsampling within large segments and household nonresponse, the sample is nearly self-weighting. That is, each sample person has approximately the same chance of being selected for the survey. [Separate instructions are provided for identifying, selecting, and interviewing persons residing in special places.

A telephone health interview feasibility study was used to measure the success rate for identifying special places in an RDD telephone survey and to verify the number of eligible sample units within the special places. The feasibility study represents the first phase of the development of a dual frame NHIS. The study was conducted by the Bureau of the Census in 1984, to evaluate the feasibility of using the NHIS questionnaire in a telephone survey, to determine the response rate that could be achieved by the Bureau of the Census, and to test operational issues related to a telephone NHIS. The sample for the telephone survey was selected using a two stage procedure described by Waksberg (2). Twenty-one primary sampling units were selected and twelve secondary units were selected within each primary, yielding 252 units. The sample was replicated twelve times for a total sample size of 3024 households.

Each replicate could be expected to yield about five special place sampling units. However, these special places were not used in the analysis because not enough was known about them to have a controlled experiment. A success rate for identifying these special places could not be calculated because there was no way of

3. RESULTS

3.1 Characteristics of Persons in Special Places

The following table shows the percentage of households classified as a special place in the NHIS as well as the percentage of persons who reside in the special places. Both weighted and unweighted estimates are shown to illustrate the impact of the differential sampling rates used to sample the special places.

Special Place	Households		Persons	
	wgtd	not wgtd	wgtd	not wgtd
Special Place	3.17	2.86	2.30	2.08
Not				
Special Place	96.83	97.14	97.70	97.14

We see that approximately 3% of dwelling places are special places and that about 2% of persons live in special places.

Table 1 shows the number and percent of persons residing in specific types of special places. Over half of the special place population resides in trailer camps. The next most populous type of special place is student quarters (18%), and the third most heavily populated is the transient type of hotels, motels, and tourist camps or courts (6.5%). Other types of special places comprise the remaining 22% of the special place population.

Tables 2 and 3 give the sociodemographic characteristics of persons in special places compared to persons not residing in special places. We see that 31 percent of the special place population is in the age group 18-24 compared to only 12 percent of the nonspecial place population. Of the special place population in this age group, 61 percent reside in student quarters. The distribution by sex for persons in special places compared with persons not in special places is approximately the same. There is a substantially lower percentage (5.2%) of blacks in special places than not (11.9%). There is also a lower percentage of the special place population residing in urban areas when compared to persons not in special places.

The demographic subdomain that has the higher percentage residing in special places is the 18-24 year olds. Almost 6 percent of this age group resided in special places (primarily in student quarters). The potential for a coverage bias when special places are excluded in telephone surveys is probably greatest for this subdomain, especially since the persons residing in special places are more likely to be better educated.

Table 4 is a comparison of telephone coverage by persons in special places and persons not in special places. The telephone coverage of persons in special places (83%) is 10 percent lower than that of persons not in special places (93%). Since only 3 percent of all persons reside in special places, the telephone coverage rate for the total population is not significantly reduced.

Table 5 tabulates the demographic characteristics of persons in special places by telephone status. We see a larger percentage of the 0-17 age group do not have telephones (24.0%) than for the other age groups. The 65+ age group had the highest percentage (93.4%) of phones. More males in special places do not have phones

knowing the number of special places which were in sample but not correctly identified as special places. Also, there would be no easy way to verify any listing of living arrangements obtained for these special places. Therefore, the special places selected through the regular sample design were treated as "out-of-scope" for the survey, whenever they were correctly identified.

To measure the success of identifying special places and to verify living arrangements, the sample was seeded with known special places. Then, the number of special places correctly identified could be compared to the total number seeded to calculate a success rate. Also, living arrangements could be more easily verified. Each replicate, starting with Rep. 02, was seeded with special places drawn from the two sources described below.

(1) The Bureau's clerical operations unit identified 96 special places that rotated out of previous Bureau face-to-face surveys since December 1982. These special places were randomly assigned to replicates 02-12 of the telephone survey. The types of places included in this frame included the full gamut of special places, ranging from student housing to correctional and long term care institutions. The frame included a sizeable number of fairly small places with fewer than 20 eligible units, since these are the types of places most likely to rotate out of the current surveys after their eligible units are enumerated.

The intent of using special places from other surveys was to provide a means to compare the listing of units made by the RDD staff with the field listing made by a Census Bureau enumerator who visited the place in person for the other survey. This provided a rough indication of how well the eligible units within special places could be identified over the telephone. There was no attempt to actually conduct telephone interviews at these places, because of respondent burden considerations and the operational problems associated with special place enumeration.

(2) In addition to the special places derived from other Bureau surveys, each replicate was also seeded with 20 telephone numbers known to be for special places, drawn from 1983 telephone directories. Three hundred special places were identified by clerks who were provided with randomized lists of types of special places. Each clerk was assigned several commercial telephone directories and instructed to search for listings under the special place types assigned. For example, the clerk whose list showed "Rooming Houses" was instructed to compile a list of a specified number of rooming houses from the Yellow Pages assigned to him/her. Each special place was listed on an index card. The card deck was then shuffled, and twenty special places were randomly assigned to each replicate of the study. This process assured that each replicate would include a variety of special place telephone numbers.

The intent of seeding the sample with telephone directory special places was to provide a reading of the ability of RDD enumerators to distinguish special places from regular housing units and from commercial (nonresidential) telephone numbers.

than females, while blacks had a higher percentage without phones than nonblacks. Fortunately, there is only a small percentage of blacks in special places.

Table 6 is a comparison of health characteristics of persons residing in special places and persons not residing in special places. We find the mean number of doctor visits is higher for those living in special places than for those not living in special places. Dental visits are about the same. Restricted activity days and short stay hospital days are higher for those living in special places than for those not living in special places. Note that the means for persons not in special places approximate the means for all persons very closely.

For people in special places, the breakdown by telephone status is also given in Table 6. Persons with telephones had more doctor visits, more restricted activity days, and more short stay hospital days. These results are consistent with earlier results that show the telephone population tends to be a higher user of health care (see Thornberry and Massey (1)).

Standard errors for the person statistics shown in Tables 1 - 5 can be approximated by using Tables I and II in Appendix B. Standard errors were not calculated for statistics shown in Table 6.

3.2 Identifying Special Places in a Telephone Survey

For the special places seeded into the sample for the telephone feasibility study from both sources (see Section 2), the RDD enumerators successfully identified only about 39 percent of the special place telephone numbers seeded into the sample during replicates 2 through 12. The low rate of success in identifying telephone numbers for special places suggests that these telephone numbers are difficult for enumerators to distinguish from commercial or other residential telephone numbers. It is noteworthy that the success rate over the final five replicates increased from 39 percent to 57 percent. This increase followed an intensive refresher training session in which all supervisors and enumerators had the opportunity to review and practice the special place identification procedures. The increased success rate was noticed in the replicate immediately following the retraining and was sustained for the duration of the study. This suggests that special place identification is a difficult task for enumerators and that intensive initial training followed by periodic refresher training might result in improved performance. The initial enumerator training on special place procedures was secondary to the training on interview techniques for the regular survey document, and so some enumerators received very little formal training on special place procedures. In addition, the regular survey questionnaire was not set up to lead the enumerator easily through a series of special place screening questions. Thus, in many cases the initial determination of whether a telephone number served a special place was based upon the respondent's reaction to the screening question "Have I reached you on your home phone?" The screening questions were modified after replicate 7 to include the probe "Does this number serve a

place where people can live...?" in hopes of identifying special places where the respondent initially indicated that the number was for someplace other than his/her "home". This modified screening procedure, coupled with the formal retraining after replicate 7, led to the improved success rate for the final five replicates of the special place study.

Table 7 displays the distribution of success rates by type of special place for the last five replications of the telephone survey. Data for the total survey are not shown because of the operational problems described above for the first half of the survey. Table 7 shows that during replicates 8-12, motels and hotels had the highest rate of identification in the telephone survey (87 percent). Rectories, convents, and missions were correctly identified in 10 out of 13 cases, while dormitories, fraternities, and sororities were correctly identified in 9 out of 14 cases. Rest homes were also identified reasonably accurately. Other types of special places were not easily identified in the telephone survey. Trailer parks were not identified as a special place for any of the 8 seeded cases. Rooming and boarding houses were correctly identified in only 6 out of 13 cases.

The overall success rate of 57 percent is not very acceptable for survey work. In 32 of the 100 eligible special places, the RDD enumerators identified the place as nonresidential. In these places no telephone interview would have been conducted, thus we cannot determine whether these places contained an eligible sample person for the NHIS. In order to determine whether a special place contains an eligible sample person, the place must first be correctly identified as a special place.

From the information collected in the telephone survey, it is difficult to explain the difference in the success rate between the different types of special places. There does seem to be some evidence that types of places which identify themselves as a place of business immediately upon answering the phone were better identified. For example, a motel would most likely identify itself immediately upon answering the phone, while a person residing in a trailer park likely would not.

The telephone study was undertaken with two goals: (1) to provide a reading on the ability of telephone enumerators to successfully differentiate special place telephone numbers from other residential and nonresidential numbers, and (2) to provide a preliminary indication of how well the eligible sample units within special places could be identified and listed. The latter goal was considered secondary to the measurement of the ability of enumerators to identify special places over the telephone, but the results provide some interesting preliminary findings.

Some of the special places seeded into the sample were derived from other Census Bureau face-to-face surveys where interviewers visited special places and list-enumerated them. The intent of seeding the sample with these field-listed special places was to compare the listing made in the face-to-face interview situation with the listing made over the telephone. Table 8 provides the results for the

15 places where the two independent listings were made. The small size of this sample is related to several factors, including refusals by some special places to provide a listing of units over the telephone, and clerical problems with contacting several places within a reasonable period of time because of higher priority work on the regular enumeration aspects of the overall RDD study.

The Table 8 results show that the telephone listing of special place units was identical to the face-to-face listing in 11 of the 15 special places. In one special place the RDD lister erroneously listed over 300 ineligible units because of a misunderstanding of the eligibility rules for the survey. The listings in the remaining three special places differed from the face-to-face listing because of changes that occurred in the special place after the face-to-face listing. Although the sample of 15 places is much too small to make generalizations, the results suggest that telephone enumerators can make accurate and complete listings of units within special places provided they have structured questions to ask and formal procedures to follow.

4. CONCLUSIONS

The demographic and health characteristics of persons in special places is different from persons who do not reside in special places. The overall coverage bias will be small, however, since less than 3 percent of the population reside in special places. The subdomain with the higher percentage of persons in special places is the 18-24 age group. Persons in special places are less likely to have telephones than persons not in special places.

The telephone study was preliminary in nature, and provided some limited empirical evidence on the ability of telephone interviewers to successfully identify special places and to compile a list of eligible units within the identified special places. The results

suggest that intensive training is important for adequate success rates, and that special place identification is more difficult on the telephone than face-to-face. The result may be somewhat misleading since the special places were selected using definitions designed for a face-to-face survey. The results also suggest that the telephone enumerators can successfully compile a sampling frame of eligible units within special places.

Future studies of the viability of identifying and sampling special places using the RDD methodology are currently in the planning stage at the Bureau. These studies will look at such variables as interviewer characteristics and how they relate to successful performance on the special place operations, modified screening and probe procedures and their effect on the ability of enumerators to successfully screen for special places, and an in-depth investigation of some of the operational problems associated with identifying the units which are eligible for inclusion in the various demographic surveys conducted by the Bureau of the Census. Additional research is also needed to determine the cost and feasibility of conducting telephone interviews in special places. It would be very useful to know how other survey organizations define special places and how they are handled in telephone surveys.

REFERENCES

- Thornberry, Owen T., Jr. and Massey, James T. (1983), "Coverage and Response in Random Digit Dialed National Surveys," Proceedings of the American Statistical Association, Section on Survey Research Methods, 654-659.
- Waksberg, Joseph (1978), "Sampling Methods for Random Digit Dialing," Journal of the American Statistical Association, 73:361,40-46.

Table 1. Number and Persons Residing in Special Places for the National Health Interview Survey

Type of Special Place	Number of SP	Percent of SP Population	Persons Residing in SP	Percent of SP Population
Nurses' Homes	33,103	1.4	37,711	0.7
Flophouses, Missions, and Camps	23,908	1.0	43,446	0.8
Trailer Camps	1,158,534	47.1	2,728,206	52.7
Tent Camps and Armed Forces Installations	64,365	2.6	139,059	2.7
Correctional Institutions	5,517	0.2	11,809	0.2
Mental Institutions	22,068	0.9	40,776	0.8
Homes for the Aged, Infirm, and Needy	23,907	1.0	50,993	1.0
Other Hospitals and Homes Providing Specialized Care	36,780	1.5	72,054	1.4
Hotels and Motels, Transient-type	163,619	6.7	335,538	6.5
Hotels and Motels, Nontransient-type	88,273	3.6	134,347	2.6
YMCA, YWCA, YMHA, Private Residential Clubs	3,678	0.2	5,701	0.1
Rooming and Boarding Houses, Tourist Homes	66,205	2.7	94,131	1.8
Combination Tourist-Trailer Court	101,673	4.1	206,915	4.0
Student Quarters	503,888	20.5	971,138	18.7
Boarding School	95,630	3.9	181,969	3.5
Facilities for Housing Workers	27,585	1.1	53,307	1.0
Convents, Monasteries, Communes, Halfway Houses	36,780	1.5	68,119	1.3
Total SP	2,459,193	100.0	5,180,892	100.0
Not in SP	75,091,124	0.0	219,867,082	0.0

Table 2. Comparison (Row Percentages) of Sociodemographic Characteristics of Persons Residing in Special Places and Persons Not Residing in Special Places

Domain	Number (Thousands) in Domain	Type of Place		Type of Special Place		
		Not Special Place	Special Place	Student Quarters	Trailer Camps	Other
Age						
0-17	63104	98.6	1.4	11.3	65.1	13.7
18-24	28844	94.5	5.5	60.9	23.6	15.6
25-44	64071	98.3	1.7	4.6	65.5	29.9
45-64	44179	98.1	1.9	3.0	63.4	33.5
65+	24849	97.0	3.0	1.1	68.5	30.3
Sex						
Male	108567	97.6	2.4	21.7	51.1	27.3
Female	116481	97.8	2.2	22.8	54.4	22.8
Race						
Black	26450	99.0	1.0	20.6	18.7	60.7
Nonblack	198598	97.5	2.5	22.3	54.5	23.2
Urban/Rural						
Urban	152279	98.4	1.6	38.8	31.6	29.6
Rural	72769	96.3	3.7	6.9	72.1	20.9

Table 3. Comparison (Column Percentages) of Sociodemographic Characteristics of Persons Residing in Special Places and Persons Not Residing in Special Places

Domain	Special Places				Not Special Places	
	Student Quarters	Trailer Camps	Other	Total	Special Places	All
Age						
0-17	8.8	21.4	16.3	17.3	28.3	28.0
18-24	83.9	13.7	19.0	30.7	12.4	12.8
25-44	4.5	26.7	25.5	21.4	28.6	28.5
45-64	2.2	19.7	21.9	16.3	19.7	19.6
65+	0.7	18.6	17.3	4.3	11.0	11.0
Sex						
Male	49.7	49.4	55.4	51.0	48.2	48.2
Female	50.3	50.6	44.6	49.0	51.8	51.8
Race						
Black	4.8	1.8	12.5	5.2	11.9	11.8
Nonblack	95.2	98.2	87.5	94.8	88.1	88.2
Urban/Rural						
Urban	83.8	28.8	56.6	48.0	68.1	67.7
Rural	16.2	71.2	43.4	52.0	31.9	32.3

Table 4. Number (in thousands) and Percentage of Telephone Status for Persons in Special Places and Persons Not in Special Places

Domain	Telephone Status		
	Yes	No	Unknown
Persons in SP			
Number	4278	830	73
Percent	82.6	16.0	1.4
Persons Not in SP			
Number	204,283	14,585	999
Percent	92.9	6.6	0.5
All Persons			
Number	208,561	15,414	1072
Percent	92.7	6.9	0.5

Table 5. Number (in thousands) and Percentage of Persons in Special Places by Telephone Status for Demographic Characteristics

Domain	Telephone		No Telephone		Unknown	
	No.	Percent	No.	Percent	No.	Percent
Age						
0-17	654	73.0	215	24.0	27	3.0
18-24	1329	83.7	253	16.0	6	0.4
25-44	910	81.9	182	16.4	18	1.6
45-64	695	82.1	129	15.3	22	2.7
65+	691	93.4	49	6.6	-	-
Sex						
Male	2126	80.5	480	18.2	35	1.3
Female	2152	84.7	349	13.8	38	1.5
Race						
Black	149	55.6	117	43.7	2	0.7
Nonblack	4130	84.0	713	14.5	71	1.4
Total	4278	82.6	830	16.0	73	1.4

Table 6. Comparison of Health Characteristics of Persons Residing in Special Places and Persons Not Residing in Special Places

Domain	Doctor Visits		Dental Activity		Restricted Stay Hospital	
	Visits	Days	Days	Days	Days	Days
Persons in SP						
Persons in SP	3.80	0.05	0.94	0.94	1.50	1.50
No Telephone	2.97	0.05	0.52	0.52	1.23	1.23
Telephone	3.96	0.06	1.01	1.01	1.58	1.58
Persons not in SP						
Persons not in SP	3.42	0.06	0.73	0.73	0.97	0.97
All Persons	3.43	0.06	0.74	0.74	0.99	0.99

Table 7. Special Place Identification Success Rate by Type of Special Place for Last Five Replications of Telephone Survey

Type of Place	Number Seeded	Telephone Survey Identification					
		Non-working Number	Eligible	Regular Living Quarters	Non-residential	Special Place	Success Rate (percent)
Motels/Hotels	15	0	15	0	2	13	87
Rectories/Convents/ Missions	14	1	13	0	3	10	77
Rest Homes	17	2	15	1	4	10	67
Dormitories/Fraternity/ Sorority	16	2	14	1	4	9	64
Other	16	4	12	0	6	6	50
Rooming/Boarding/ Tourist Homes	21	8	13	3	4	6	46
Sanitarium/Rehabilitation Centers	14	4	10	3	4	3	30
Trailer Parks	12	4	8	3	5	0	0
Special Places Replicates 7-12	125	25	100	11	32	57	57

Table 8. Special Place Units Listed by RDD Compared to Units Listed Face-to-Face

	<u>Units Listed by Telephone¹⁾</u>	<u>Units Listed Face-to-Face¹⁾</u>	<u>Difference</u>
Convent	7	4	3
Group Home	0	0	0
Hotel	0	0	0
Hotel	0	0	0
Motel	0	0	0
Rectory	0	4	4
Rest Home	5	5	0
Motel	1	1	0
Motel	1	1	0
Tourist Home	18	18	0
Fraternity House	18	16	2
Dormitory	60	60	0
Retirement Home	1	1	0
Retirement Home ²⁾	330	0	330
Rectory	5	5	0

1) Places with zero units listed had no units eligible for the survey, e.g.,

2) institutions with no rooms for staff or resident employees.

RDD enumerator listed ineligible units due to misunderstanding of the eligibility rules.