



UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, DC 20233-0001

MAY 18 1999

MEMORANDUM FOR Chester E. Bowie
Chief, Demographic Surveys Division

From: Alan R. Tupek *AR*
Acting Chief, Demographic Statistical Methods Division

Subject: Sampling Specifications for the 1999 Long-Term Care Survey (LTC): Longitudinal Portion, and Longitudinal Portion of the Healthy Supplement and the 95+ supplement

This memorandum describes the second step in the sample selection for the longitudinal portion of the 1994 LTC. In the first step, the Health Care Financing Administration updated the longitudinal file. The first step is documented in the memorandum dated May 18, 1999 from Tupek to Bowie, "Specifications for Updating the Longitudinal Portion of the Long-term Care Survey (LTC) for 1999." The second step gives instructions for selecting the 1999 longitudinal sample, the longitudinal sample to be in the healthy supplement, and the 95+ supplement.

The 1999 LTC sample will consist of 19,875 persons. Of these persons, 5,500 will be selected from persons on the Medicare files who turned 65 since April 1, 1994 (the aged-in sample). Six hundred persons will be selected from persons on the Medicare files who turned 95 on or before March 31, 1999 (the 95+ supplement). The above mentioned persons are not part of the longitudinal sample. The longitudinal portion of the 1999 LTC consists of 13,775 persons from the following groups based on their outcome in the 1994 LTC.

<u>Cohort</u>	<u>Description</u>
(1)	All persons assigned a detailed community interview in the 1994 LTC. There are 3,557 such persons.
(4)	All persons assigned a detailed institutional interview in the 1994 LTC. There are 334 such persons.
(5)	A sample of 5,000 persons unimpaired in the 1994 LTC (not assigned a detailed community or institutional interview).
(7)	All persons 75+ before April 1, 1999; unimpaired in the 1994 LTC (not assigned a detailed community or institutional interview); and

not already selected for (5) above. There are 3,284 such persons.

- (8) All persons unimpaired in 1989 and not selected for the 1994 LTC. There are 1,600 such persons.

1994 was the first year of the 95+ supplement and the healthy sample. Those selected in 1994 for these supplements will continue to be in these supplements in 1999.

The people in the 95+ supplement made up cohort (9) in 1994. These people are now part of the regular longitudinal sample for 1999 (i.e., they'll be in cohort (1), (4), (5), or (7)) but are also still part of the 95+ supplement. We estimate that for LTC 1999, 32 people from cohort (1), 15 people from cohort (4), and 131 people from cohorts (5) and (7) were in the 95+ supplement in 1994. These people, in addition to the 600 selected from the aged-in component make up the 1999 LTC 95+ supplement.

For 1999, we expect a sample size of 1,545 for the healthy supplement. Approximately 762 of these people continue from the 1994 survey sample and about 783 will be newly selected from cohorts (6) and (8). See memorandum from Tupek to Bowie, dated May 18, 1999, "Sampling Specifications for the 1999 Long-Term Care Survey: the Aged-In Cohort, the 95+ Supplement, and the Aged-In Portion of the Healthy Supplement" for instructions for the selection of the healthy supplement for cohort (6). Instructions for selecting the healthy supplement for cohort (8) are provided below in section II.

Persons in cohorts (1), (4), (7), and (8) defined above do not need to be sampled since all persons in these cohorts will be selected for the longitudinal sample.

I. Selection of a Sample of the 1994 Unimpaired for the 1999 LTC (Cohort (5))

A. The Sort

Before these people can be sampled their records need to be sorted in the following order:

1. 1989 Sample Identification Code (SIC)

These are given in the fifth digit of a person's 1994 control number.

- | | |
|----------|--|
| 1 = | Community Interview |
| 4 = | Institutional Interview |
| 5 or 7 = | Unimpaired |
| 6 = | Aged-in (turned 65 on or after April 1, 1988 and before April 1, 1994) |
| 8 = | Unimpaired in 1984, not selected in 1989 |

9 = Selected for 95+ supplement in 1994

Note: Since only persons who screened out (unimpaired) in 1994 are in the file being sorted, the values 1 and 4 should not appear.

2. By Stratum Number within 1989 SIC

These should have been assigned as a code for the 1994 sample. It is based on each person's original reason for entitlement.

- i) Stratum 1-all persons originally entitled due to age
- ii) Stratum 2-all persons originally entitled due to disability

3. By Current Survey (CS) PSU within stratum within SIC.

4. By race (white, black, other, unknown) within CS PSUs within stratum within SIC.

5. By age as of April 1, 1994 within race within CS PSUs within stratum within SIC.

B. The Sampling Interval and Random Start

First count the number of nondeceased persons on the file.

Let N = the total number of unimpaired nondeceased persons from the 1994 LTC, then

$$SI = \frac{N}{5000} \text{ rounded to 4 decimal places.}$$

To start the selection of the sample a random start (RS) should be chosen so that $1 \leq RS \leq SI$.

C. Selection of the Sample

Determine the sequence of number $RS, RS + SI, RS + 2SI, RS + 3SI, \dots$ until the absolute difference between N and the last number of the sequence is less than SI . Next, round each number of the sequence up to the next integer (e.g., 6.0487 is rounded up to 7. Note that 5.0000 is rounded to 5). Consider the record for each unimpaired person as numbered consecutively from 1 to N ; then those persons with numbers corresponding to those in the above sequence are the sample of 1994 LTC unimpaired persons included in the 1999 LTC. After the sample is

selected, determine the total number of persons in the sample.

D. Persons Unimpaired and 75+

All persons who are 75+, were unimpaired in the 1994 LTC, and have not been selected in I.C. above should be included as part of the 1999 longitudinal sample. These persons are referred to as cohort (7) on page 2 of this memorandum.

II. Designating Which Longitudinal Persons are Eligible for the Healthy Supplement

A. Overview

A sample of persons from cohort 8 need to be selected for the healthy supplement. If these persons screen in as healthy, they will be interviewed with an abbreviated Community Questionnaire at the time of their LTC interview. Otherwise they'll receive a regular interview. Section III.A. describes how an H will be assigned to the control number for these persons.

B. Sorting Cohort 8 of the Longitudinal Sample

Before selecting the healthy supplement from the longitudinal sample cohort 8, sort the records within this cohort in the following order:

1. By stratum number
2. By LTC PSU number within stratum
3. By race (white, black, other, unknown) within LTC PSUs within stratum
4. By age within races within LTC PSUs within stratum

C. Random Start and Sampling Interval (Note: the random start and sampling interval described below is the same random start and sampling interval used for the aged-in component.

1. The sampling interval (SI) for selecting the healthy supplement is

$$SI = (1,600 \text{ (persons from cohort 8)} + 5,500 \text{ (aged-in)}) \div 283 = 7100/283 = 25.0883$$

2. Generate a uniform random number U , $0 < U < 1$, and then calculate the random start: $RS = U * SI$

D. Applying the Random Start and Sampling Interval

Select the sample of persons for the healthy supplement for cohort 8 as follows:

1. First determine the sequence of numbers
 $RS, RS + SI, RS + 2*SI, RS + 3*SI, \dots$, until the absolute difference between the number of persons in cohort 8 (n) and the last member of the sequence is less than SI .
2. Next round each number of the sequence up to the next integer (e.g. 6.0487 is rounded to 7). Note a number such as 5.0000 is rounded to 5.
3. Assign a consecutive number to those in cohort 8 from 1 to n . Those persons with numbers corresponding to those in the above rounded sequence are the persons from cohort 8 that are in the healthy supplement.

E. Designating Persons from the Longitudinal Sample to Receive the Healthy Supplement if They Screen in as Healthy

The records of persons selected for the longitudinal sample and the healthy supplement will be designated with an H in their control numbers according to the specifications given in section III.A.

III. Sample File

Following the selection of the 1994 unimpaired and the healthy supplement (sections I. and II. above), create a sample file for the longitudinal sample (cohorts (1), (4), (5), (7), and (8)) consisting of the entire compressed record (see Attachment B), plus the LTC PSU number and all sample identifiers and parameters listed in III.A. below. The records of this file should be sorted by LTC PSU in numerical order as specified in Attachment A, then by control number within LTC PSU.

A. Sample Identification Codes and Parameters

Several codes and parameter values are to be assigned to each person on the sample file. Some codes are to be applied in a systematic fashion; it is important that these codes are applied to sample persons in the prescribed order. Such ordering is specified below for the codes which are to be applied systematically.

Assign the following codes and parameter values to the sample persons:

1. LTC Control Number

Each sample person is to be assigned a 14 digit LTC control number. The control number has the following form:

- Digit 1: screener or nonscreener code
- Digit 2: sample identification code 1 (based on status in 1982, also referred to as the 1984 sample component)
- Digit 3: sample identification code 2 (based on status in 1984, also referred to as the 1989 sample component)
- Digit 4: sample identification code 3 (based on status in 1989, also referred to as the 1994 sample component)
- Digit 5: sample identification code 4 (based on status in 1994 for longitudinal components and identifies the aged-in and 95+ supplemental components for 1999)
- Digits 6-8: 1970 CS PSU number (given in Attachment A)
- Digits 9-12: sequential numbers within 1970 CS PSUs
- Digit 13: healthy supplement code 1994 (identifies persons selected to receive the healthy supplement in 1994 if they were determined to be healthy)
- Digit 14: healthy supplement code 1999 (identifies persons selected to receive the healthy supplement in 1999 if they are determined to be healthy)

The control number differs from the control number for the 1994 LTC survey by the addition and deletion of the following digits: the deletion of the zero-filled pad (digit 2), the addition of the sample identification code 4 (digit 5), and the addition of the healthy supplement code for 1999 (digit 14).

2. Below are instructions for determining each component of the control number:

a. Screener or Nonscreener Code (Digit 1)

The first digit of a person's control number indicates whether the person receives a full or partial screener interview. An S indicates a full screener interview and an N indicates a partial screener interview.

All persons unimpaired in previous LTC surveys should have an S for digit 1. All persons impaired in the 1994 LTC survey should have an N for digit 1.

b. Sample Identification Code 1 (Digit 2)

The second digit of a person's control number designates a person's 1982 status group for the 1984 LTC. These are given below:

<u>Numeric Codes</u>	<u>Description</u>
(0)	A person who was not in the 1984 LTC, or a person who was unimpaired in the 1984 LTC but was not selected for the 1989 LTC.
(1)	A person who was given a detailed community interview in the 1982 LTC.
(2)	A person who was type A noninterview for their 1982 detailed community interview.
(3)	A person who was type A noninterview for their 1982 screener and who was institutionalized after April 1, 1982.
(4)	A person who was type C noninterview for their 1982 screener and who was institutionalized before April 1, 1982.
(5)	A person who was unimpaired in the 1982 LTC.
(6)	A person who aged into the 1984 sample (not in the 1982 population due to age).

c. Sample Identification Code 2 (Digit 3)

The third digit of a person's control number designates the person's 1984 status group for the 1989 LTC. These are given below:

<u>Numeric Codes</u>	<u>Description</u>
(0)	A person who was not in the 1989 LTC.
(1)	A person who was given a detailed community interview in the 1984 LTC. This includes Type A

nondeceased persons in the 1984 LTC.

- (4) A person who was given a detailed institutional interview in the 1984 LTC. This includes Type A nondeceased persons in the 1984 LTC.
- (5) A person who was unimpaired in the 1984 LTC (not assigned a detailed community or institutional interview) and was in the sample chosen for the 1989 LTC.
- (6) A person who turned 65 on or after April 1, 1984 (aged-in for the 1989 LTC).
- (7) A person who was unimpaired in 1984, who is 75+ years in the 1989 LTC, and who was not selected for (5) above.

Assign persons unimpaired in 1984 but not selected for the 1989 LTC a 0 for digit 3.

d. Sample Identification Code 3 (Digit 4)

The fourth digit of a person's control number designates the person's 1989 status group (for the 1994 LTC). These are given below:

<u>Numeric Codes</u>	<u>Description</u>
(0)	A person who was not in the 1994 LTC.
(1)	A person who was given a detailed community interview in the 1989 LTC. This includes Type A nondeceased persons in the 1989 LTC.
(4)	A person who was given a detailed institutional interview in the 1989 LTC. This includes Type A nondeceased persons in the 1989 LTC.
(5)	A person who was unimpaired in the 1989 LTC (not assigned a detailed community or institutional interview) in the sample chosen for the 1994 LTC.

- (6) A person who turned 65 on or after April 1, 1988 (aged-in for the 1994 LTC).
- (7) A person who was unimpaired in the 1989 LTC, who is 75+ years in 1994, and who was not selected for (5) above.
- (8) A person who was unimpaired in the 1984 LTC but who was not selected for the 1989 LTC.

Assign persons unimpaired in 1989 but not selected for the 1994 LTC a 0 for digit 4.

e. Sample Identification Code 4 (Digit 5)

The fifth digit of a person's control number designates the person's 1994 status group (for the 1999 LTC). These are given below:

<u>Numeric Codes</u>	<u>Description</u>
(1)	A person who was given a detailed community interview in the 1994 LTC. This includes Type A nondeceased persons in the 1994 LTC.
(4)	A person who was given a detailed institutional interview in the 1994 LTC. This includes Type A nondeceased persons in the 1994 LTC.
(5)	A person who was unimpaired in the 1994 LTC (not assigned a detailed community or institutional interview) in the sample chosen for the 1999 LTC.
(6)	A person who turned 65 on or after April 1, 1994 (aged-in for the 1999 LTC).
(7)	A person who was unimpaired in the 1994 LTC, who is 75+ years in 1999, and who was not selected for (5) above.
(8)	A person who was unimpaired in the 1989 LTC but who was not selected for the 1994 LTC.
(9)	A person who turned 95 on or after April 1, 1994 (the 95+ supplement, aged-in)

f. 1970 CS PSU Number (Digits 6-8)

Persons in the longitudinal portion of LTC should use the same number they were assigned for the 1994 LTC.

g. Sequential Numbers Within CS PSUs (Digits 9-12)

Persons in the longitudinal portion of LTC should use the same number they were assigned for the 1994 LTC.

h. Healthy Supplement Code -- 1994 (Digit 13)

Assign all persons selected for the 1994 healthy supplement the letter H for digit 13 of their control number. Assign all other persons the letter

O for digit 13 of their control number.

i. Healthy Supplement Code -- 1999 (Digit 14)

Assign all persons selected for the 1999 healthy supplement the letter H for digit 14 of their control number. Assign all other persons the letter O for digit 14 of their control number. Anyone with an H in digit 13 should have an H in digit 14.

Always write the control number with dashes after the sample identification code 4, after the 1970 CS PSU number, and before the healthy supplement code--1994. For example, S0655-105-0045-HH.

3. Reduction Group Code

Reduction group codes are assigned in case a sample needs to be reduced in the future. A sample may need to be reduced because of budgetary problems. Sort the longitudinal sample as described in section II.B. Assign a three digit code to each sample person in the longitudinal sample. Assign a reduction group code to each person, beginning with 011 for the first sample person, increasing by one until a person is assigned reduction group code 101, then continuing with 001 through 101 as often as necessary.

4. Stratum Code

Retain each person's stratum code.

5. Quantities to be Used in Weighting the Sample

Retain each sample person's longitudinal record.

B. Output

Please provide DSMD with the following data so that the sample selection can be verified:

1. A dump of 200 records: 20 records from the beginning and end of each longitudinal component
2. N = the total number of unimpaired nondeceased persons from the 1994

LTC (cohort (5))

3. SI = the sampling interval for selecting the sample of 5,000 unimpaired persons from the 1994 LTC
4. n_i = the number of persons in the sample of persons selected to be in the 1999 sample for each 1994 LTC cohort. The 1994 LTC cohorts are defined on pp.1-2 of this memorandum.
5. h_i = the number of persons designated for the healthy supplement for each 1994 LTC cohort (i.e., the number of persons who have an H in their control number).

In addition, provide DSMD access to a copy of the sample file, for miscellaneous verification.

Attachments

cc:

S. Higgins	(DSD)
R. Schwartz	"
E. Williams	"
J. Pilkerton	"
C. Alexander	(DSMD)
A. Brinkley	"
P. Murphy	"
F. Winters	"

K:\LTC\LTC1999\SMPLONG.WPD