Individual Long-Term Care Planning in Maryland Survey Analysis

Technical Appendix

Prepared for
Maryland Department of Health and Mental Hygiene

By
Center for Health Program Development and Management
University of Maryland, Baltimore County

March 2001

Individual Long-Term Care Planning in Maryland Survey Analysis

Technical Appendix

I. Target Population and Sample

The objective of this survey was to contact Maryland residents between the ages of 40 and 70 years for the purpose of collecting information related to individual knowledge and attitudes of long-term care costs, the provision of long-term care, and long-term care planning. The target population includes all Maryland residents in the above age group that were not receiving long-term care services at the time of the survey.

Sample Frame

Eligibility to participate in the telephone survey was determined by respondent age, place of residence, and use of long-term care. A potential respondent was defined as a person between the ages of 40 and 70 years, not residing in a nursing home or assisted living facility, and not currently receiving long-term care.

Sampling Procedure

The sample was selected from phone list data provided by Survey Sampling, Inc. of Fairfield, Connecticut. Secondary source data such as driver's license, voter registrations, magazine subscription lists, and school registration lists were used to determine age ranges for each household. Once the age criteria for the survey were met, the sample was stratified by each Maryland jurisdiction (23 counties plus Baltimore City) to ensure a final sample geographically representative of the target population (non-institutionalized Maryland residents aged 40 to 70 years) based on 1990 Census data.

Based on the sample frame size and the requested sample size, a sampling interval was created. Using this sampling interval multiplied by a random number between zero and one, a random starting point was determined. Sample frame elements were then counted until the random starting point was reached with sample points selected after each interval from the start. The sample was accumulated in this fashion until the desired sample size was reached.

To ensure that the phone numbers sampled were residential numbers, several screens were used. The screening process was meant to detect non-working or unassigned numbers, fax, modem, beeper and cell phone numbers, and business numbers. The purpose of these screens was to improve the proportion of working phone numbers in the sample.

II.   Data Collection and Processing

Pre-testing of the survey instrument involved review of the survey instrument (in hard copy and web-based form) by experienced interviewers, new interviewers, project team members, and randomly selected readers with no knowledge of the survey project. On-phone and role playing interviews were also conducted to gauge length of interview, question flow, and address other issues related to conducting the survey. Approximately 20 people were involved in the pre-testing process.

Screens at the beginning of the survey were designed to ensure that the respondent fit the criteria for the sample. These criteria were:

- Maryland resident between the ages of 40 and 70 years
- Respondent not living in a nursing home or assisted living facility
- Respondent not currently receiving long-term care services

Interviewer Training

Before beginning survey interviews, all interviewers were required to attend a training session specific to the Long-Term Care Planning Survey. During the two-hour training session, the interviewers were given an overview and a question-by-question review of the survey; instructed on good interviewing procedures, survey tasks, and supervision; and provided with copies of the survey instrument and other relevant materials (definitions, face sheets, and sequence pages).

Collection and Processing

The surveys were conducted between July 6, 1999 and October 11, 1999 by telephone using a web-based survey instrument. The minimum and maximum number of contact attempts were 6 and 12, respectively. Data summaries of the survey were generated frequently to confirm dispositions, check for completeness and consistency, and scan for invalid entries. In addition, supervisors randomly listened-in during interviews to ensure maintenance of quality and to evaluate the need to redirect or correct interviewer practices.

Response Rate

The response rate was measured using two Council of American Survey Research Organization (CASRO) formulae (AAPOR, 1998). Two measurements were used to provide upper and lower bounds for the survey response rate:

● Response Rate 1 (minimum response rate)

RR1 = Completes / Completes + Refusals + Eligible Non-Contact + Unknown Eligibility Non-Contact

Since this response rate is based on the eligibility criteria of the survey, ineligible respondents, business numbers, non-working and disconnected numbers, fax, and cell phone numbers are not included in the response rate. Eligible non-contacts are those instances where eligibility was determined but an interview never took place. For this survey, an eligible non-contact is defined as an incomplete survey or a case in which an eligible individual was determined to reside in the household (self-reported or by another household member) but a completed interview never occurred. These differ from refusals in that an explicit refusal to participate was never received mainly due to the inability to re-contact the individual in the time allotted. Unknown eligibility non-contacts are instances where no contact is made to determine eligibility.

This first response rate measure provides the lower bound for the survey. A second measure provides the upper bound for the survey's response rate.

● Response Rate 2 (maximum response rate)

RR2 = Completes / Completes + Refusals + Eligible Non-Contact

The assumption for this response measure is that unknown cases are ineligible and, therefore, not necessary to be included in the final response measure.

The lower bound response rate for this survey is 30.4% with an upper bound of 40%. In addition to response rates, a Cooperation Rate, or the rate at which respondents were willing to complete the survey, once determined eligible, was measured using the following CASRO formula:

● Cooperation = Completes / Completes + Refusals

This cooperation rate provides a measure of how effective interviewers were in obtaining completed surveys from contacted eligible respondents. Survey length and the sensitive nature of some questions (for example, financial standing questions) contributed to the inability to elicit completes from potential respondents. Many interviewer comments on refusals indicated that potential respondents felt the survey was too long. Several surveys were terminated in process due to excessive length. Given that the average interviewing time was approximately 15 minutes, interviewers

were sometimes asked to break the interview up into two sessions. This also had an impact on the cooperation rate (42.3%), which includes refusals from eligible respondents. Table I provides a detailed breakdown of the final disposition categories.

Table I: Final Dispositions of Surveys

Disposition	Number	Percent of Total
Completes	1,503	22.1%
Refusals	2,052	30.2%
Known Ineligible:		
Age	1,013	14.9%
Assisted Living	14	0.2%
In Long-Term Care	23	0.3%
Non-MD Resident	20	0.3%
Unknown Eligibility, Non-Contact:		
No Contact	736	10.8%
Language Barrier	47	0.7%
Quota Reached	320	4.7%
Other Unknown	81	1.2%
Eligible Non-Contact:		
No Re-Contact*	164	2.4%
Survey too Long	26	0.4%
Moving	7	0.1%
Disconnects	464	6.8%
Business, Fax, Cell Phones	330	4.8%
Total	**6,800**	

* No Re-contacts includes the 5 complete surveys where an age refusal remained.

III.   Sampling Error and Response Bias

Sampling Error

Basic sampling error stems from the fact that only a sample of a given population versus the entire population of interest is under study. The simplest way to reduce this aspect of error is by increasing sample size (Fowler, 30). With a sample size of 1,500 for a population of over 1.6 million Maryland residents aged 40 to 70 years (Census, 1990), estimates from this study are within the 95% confidence interval with a margin of error of plus/minus 2 percentage points.[1]

Another component of sampling error is non-coverage error. Non-coverage error is error related to the ability of the sample frame to cover the target population. When using a listed sample, care must be taken to reduce non-coverage error. While some non-coverage error exists in any telephone survey (those without phones have zero probability of being covered), by screening for duplicates and non-working numbers, the potential for this type of error from other sources is reduced (SSI, 6).

According to 1990 Census figures, 3.2% of Maryland households are without phones. For householders between the ages of 60 and 74, the closest breakdown to the target population, the percentage is even smaller at 1.8% (Census, 1990, Table 1.4a). Households without phones tend to be associated with lower income groups, indicating that the primary bias from coverage error will appear as higher incomes in the sample population versus the overall population of interest (Lavrakas, 2-3). Given the percentages indicated above, non-coverage error related to those with a zero probability of being selected (i.e., households without phones) is fairly low.

Throughout the survey period, the data was checked to confirm that the sample remained geographically representative of Maryland residents aged 40 to 70 (Census, 1990). As Table 1 shows, the final survey sample is geographically representative of this group of Maryland residents. No jurisdiction is over- or under-represented by more than 1.9 percentage points. Anne Arundel County is over-represented by 1.2 percentage points; Prince George's County, Montgomery County, and Baltimore City are under-represented by 1.2, 1.7, and 1.9 percentage points, respectively. Although these are some of the larger jurisdictions in the state, these differences are small and thus, do not constitute serious concern.

---

[1]With a completely random sample, the margin of error is usually plus/minus one percentage point (Table 2.1 in Fowler, 31). Stratified sampling may be more cost effective and efficient when it is assumed the strata are homogeneous as the sample size increases; however, the sample was not drawn from the population of Maryland residents aged 40 to 70 years but from Maryland households with phones with some non-negative probability of containing an individual aged 40 to 70 years. Thus, sampling error may be slightly above one percentage point for a 95% confidence interval.

Response Bias

Response bias is error that results when a significant proportion of the population's response to the survey is unknown, or in this case, due to our inability to contact (i.e., non-response error). The method in which the sample pool is processed can have a significant impact on the amount of non-response error present in the data. Since non-response is positively correlated with the male gender, there may be potential bias in any survey measure that is highly correlated with gender. To minimize this gender bias, survey responses were tracked regularly to verify that the correct gender balance was struck in the sample (DHMH, 1995). The use of the gender instructions on the face sheets allowed for adjustment of survey procedures to improve our male respondent rate from 33% to 41%.

However, it was found that males in this age group (40-70 years) were highly resistant to survey participation. As a result, some more aggressive strategies had to be taken in an attempt to increase the male respondent rate for the final sample. Males tended to be very time conscious, which posed a problem with this survey since the average interview length was approximately 15 minutes). Gender roles also played a part in determining the number of male respondents. Men in this age bracket tended to direct the phone call to their eligible female counterpart, giving the explanation that "she handles these things". One method used to reduce this turnover was to discuss the importance of the survey, of hearing the views of all Maryland residents, and of having an accurate representation of both men and women.

Allaying suspicion for both men and women was another hurdle encountered while conducting this survey. In every session, interviewers had to emphasize that the goal was not to sell them insurance but to learn about their views of long-term care and related issues. Females tended to be suspicious when household inquiries were made, especially in the search for male respondents (Are they checking to see if I live alone? Who is this woman asking for my husband?). To remedy this problem, interviewers were instructed to reiterate pertinent identification information (interviewer name, calling from UM for research purposes only) and confidentiality of survey responses.

IV.   Summary of Sample Data

Descriptive characteristics of the survey sample are presented in Tables 1 through 5. The average age for the survey sample is 52.3 years. About two-thirds of respondents were married and had incomes between $20,000 and $80,000. The majority of respondents resided in households with four occupants, two of which were between the ages of 40 and 70. Almost 29% had a high school education or less, which is lower than the population estimates for this age group. Ninety-five percent of respondents indicated having some type of health insurance.

Table 1:
Distribution of Completed Long-Term Care Planning Surveys By Jurisdiction

Jurisdiction (County)	Sample Percentage 40-70 Years Old	Population Percentage 40-70 Years Old	Difference
Allegany	2.1%	1.7%	0.4%
Anne Arundel	10.5%	9.3%	1.2%
Baltimore	14.2%	14.3%	-0.1%
Calvert	2.1%	1.7%	0.4%
Caroline	1.1%	0.7%	0.4%
Carroll	3.8%	3.4%	0.4%
Cecil	1.7%	1.8%	-0.1%
Charles	2.3%	2.0%	0.3%
Dorchester	0.9%	0.7%	0.2%
Frederick	4.1%	3.6%	0.5%
Garrett	1.1%	1.0%	0.1%
Harford	5.2%	4.2%	1.0%
Howard	4.9%	4.5%	0.4%
Kent	0.7%	0.6%	0.1%
Montgomery	16.4%	18.1%	-1.7%
Prince George's	10.7%	11.9%	-1.2%
Queen Anne's	1.3%	1.0%	0.3%
St. Mary's	1.0%	1.7%	-0.7%
Somerset	0.7%	0.4%	0.3%
Talbot	0.9%	0.9%	0.0%
Washington	2.7%	2.6%	0.1%
Wicomico	1.3%	1.7%	-0.4%
Worcester	1.7%	2.0%	-0.3%
Baltimore City	8.4%	10.3%	-1.9%

Source: 1990 U.S. Bureau of the Census Estimates as reported by SSI, Inc.

Table 2:
Distribution of Completed Long-Term Care Planning Surveys By Sex and Age

Sample Distribution				Population Aged 40-70 Years			
Age	Male	Female	Total	Age	Male	Female	Total
40-44	145	168	313	40-44	207,720	221,150	428,870
45-49	108	183	291	45-49	177,910	186,160	364,070
50-54	125	205	330	50-54	133,760	138,060	271,820
55-59	94	150	244	55-59	100,770	108,480	209,250
60-64	85	89	174	60-64	86,130	96,100	182,230
65-70	63	88	151	65-70	80,320	100,830	181,150
Total	**620**	**883**	**1,503**		**786,610**	**850,780**	**1,637,390**

Sample Percentages				Population Percentages			
Age	Male	Female		Age	Male	Female	
40-44	43.3%	56.7%		40-44	48.4%	51.6%	
45-49	37.1%	62.9%		45-49	48.9%	51.1%	
50-54	37.9%	62.1%		50-54	49.2%	50.8%	
55-59	38.5%	61.1%		55-59	48.2%	51.8%	
60-64	48.8%	51.1%		60-64	47.3%	52.7%	
65-70	41.7%	58.3%		65-70	44.3%	55.7%	
Total	**41.3%**	**58.7%**		**Total**	**48.0%**	**52.0%**	

Source: Estimated Population by Age and by Sex – Maryland Department of Health and Mental Hygiene, Division of Health Statistics, Maryland Vital Statistics Annual Report, 1995. As reported in the 1997 Maryland Statistical Abstract, p. 24.

Table 3:
Distribution of Completed Long-Term Care Planning Surveys By Income and Race

Income Range*	Population Percentage 40-70 Years Old	Sample Percentage 40-70 Years Old
Less than $20,000	24.5%	7.8%
$20,000 to $30,000	13.5%	10.1%
$31,000 to $60,000	19.3%	33.1%
$61,000 to $80,000	22.8%	15.5%
$81,000 to $100,000	10.8%	9.4%
Over $100,000	9.2%	13.1%
Refused		10.9%

Race	Population Percentage 40-70 Years Old	Sample Percentage 40-70 Years Old
White	71.0%	79.3%
African-American	24.9%	14.1%
American Indian or Alaska Native	0.3%	0.5%
Asian, Pacific Islander	3.8%	2.6%
Hispanic**	2.7%	2.4%
Other/Refused		3.6%

*Income distributions are approximate since exact ranges could not be matched from available data.
**Hispanics can be of any race and are already included in the other racial categories.

Sources: Household Income by Age of Householder in 1989. 1990 U.S. Bureau of the Census Lookup Table 1.4A. Race Estimates prepared by the Maryland Office of Planning, Planning Data Services, for the U.S. Bureau of the Census, Population Estimates Branch, September 1999.

Table 4:
Distribution of Completed Long-Term Care Planning Surveys
By Educational Attainment and Marital Status

Education	Population Percentage 40-70 Years Old	Sample Percentage 40-70 Years Old
Less than 9th Grade	8.1%	1.6%
9th to 12th Grade	15.4%	3.9%
High School Graduate	28.6%	23.4%
Some College or Associates Degree	21.6%	26.8%
Bachelor's Degree	13.6%	20.2%
Graduate School or Professional Degree	12.6%	23.8%
Marital Status	Population Percentage 35-74 Years Old*	Sample Percentage 40-70 Years Old
Married	69.1%	67.8%
Divorced, Widowed, or Separated	22.3%	21.4%
Not married with partner**		0.5%
Never married, single	8.5%	9.4%
Refused		0.9%

*Age bands not available to exactly match 40-70 years range.
**Census does not indicate presence of partner for Never Married category.

Sources: Educational Attainment by Age. US Census Bureau, 1990 Summary Tape File 4.
Prepared by Maryland Office of Planning, Planning Data Services, September 1999.
Marital Status by Age. US Census Bureau, 1990 Summary Tape File 4A.
Prepared by Maryland Office of Planning, Planning Data Services, October 1999.

Table 5:
Distribution of Completed Long-Term Care Planning Surveys By Household Type

Household Type	Population Percentage 35 to 74 Years Old*	Sample Percentage 40 to 70 Years Old
Owner Occupied	73.9%	87.1%
Renter Occupied	26.1%	11.0%
Relative's Home		1.1%
Retirement Community		0.1%
Other		0.7%

*Age bands not available to exactly match 40-70 years range.

Source: US Census Bureau, 1990 Summary Tape File 3A. Prepared by Maryland Office of Planning, Planning Data Services, October 1999.

References

American Association for Public Opinion Research. 1998. *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for RDD Telephone Surveys and In-Person Household Surveys*. Ann Arbor, Michigan: AAPOR.

Fowler, Floyd J. 1993. *Survey Research Methods*. Newbury Park, California: Sage Publications.

Lavrakas, Paul J. 1993. *Telephone Survey Methods: Sampling, Selection, and Supervision*. Newbury Park, California: Sage Publications.

Maryland Department of Health and Mental Hygiene (DHMH). 1995. *Maryland Vital Statistics Annual Report, 1995*. Prepared by RESI for the *1997 Maryland Statistical Abstract*. Towson, Maryland. RESI.

Rea, Louis M. and Parker, Richard A. 1997. *Designing and Conducing Survey Research: A Comprehensive Guide*. San Francisco, California: Jossey-Bass Inc., Publishers.

Survey Sampling, Inc. 1998-99. *Random Digit Samples – Part 1*. Fairfield, Connecticut: SSI, Inc.

U.S. Bureau of the Census. 1990. *Lookup Table 1.4A* Washington, DC. U.S. Bureau of the Census.

U.S. Bureau of the Census. 1999. *1990 Summary Tape File 4*. Prepared by the Maryland Office of Planning, Planning Data Services.

U.S. Bureau of the Census. 1999. *1990 Summary Tape File 4A*. Prepared by the Maryland Office of Planning, Planning Data Services.

U.S. Bureau of the Census. 1999. *1990 Summary Tape File 3A*. Prepared by the Maryland Office of Planning, Planning Data Services.