FINAL REPORT ON SURVEY DEVELOPMENT AND TESTING FOR THE OHIO NURSING HOME RESIDENT SATISFACTION SURVEY

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July 2, 2001

ACKNOWLEDGEMENTS

Background

This report provides information about the reliability and validity of the Ohio Nursing Home Resident Satisfaction Survey, and supplements the report on item development and testing submitted jointly by Scripps Gerontology Center and Margaret Blenkner Research Center on June 1, 2001.

Items for the family tool were needed by June 1 in order to conduct the family survey on time, so some results from the resident survey (i.e. items and domain reliability scores) have been previously reported. Because the family and resident surveys needed to match in as many areas as possible item choices for the resident survey were previously reported. This report provides information about short and long-term residents, test-retest and inter-rater reliability, criterion validity information, recommendations for cognitive screening of nursing home residents for participation in interviews, information about the sampling strategies used for family and resident sampling, and a plan for data analysis of the Ohio Nursing Home Family Satisfaction Survey. (See Appendix B). In addition, revisions to item wording and item order that have been made since the June 1 report are also available in Table 3. Finally, a copy of the survey instrument, along with the study information letter from ODA is included in Appendix A.

Resident Pretest

As part of the contract with ODA, Scripps was expected to conduct approximately 100 pretest interviews. However, a total of 206 original interviews, 71 test-retest, and 67 inter-rater interviews using 18 sites were conducted. Nursing homes from Hamilton and Butler counties were chosen at random from a stratified sample of small, medium, large, profit and not-for-profit facilities.

Response rates for the 369 residents sampled were as follows:

- Refused   13.8%
- Couldn't be located in facility   4.0%
- Couldn't fit interview into schedule   9.2%
- Out of facility on interview day   3.5%
- Asleep when visited 3 times   10.0%
- Other   2.0%
- Terminated during interview   1.0%
- Completed   55.8%

Protocol Testing

As part of the resident pretest, we tested different strategies for having facilities randomly sample their residents, and we also did some qualitative cognitive interviews with 9 residents to test their understanding of the sample information letter that would used in the statewide survey. In most facilities, the facility's understanding of how to conduct random sampling was minimal. Facilities developed their own strategies, and based on our experience, we recommend that interviewers be trained to draw random samples from lists provided to facilities. Instructions to facilities on how to prepare the lists, is included in Appendix A. Also included is a copy of the resident information letter and a copy of the revised interview schedule.

Testing Differences Between Short and Long-term Residents

We defined short-term residents as those who had been in the facility less than 3 months. We based our definition on resident's self-report of when they came to the facility. Approximately 14% of our respondents indicated that they were short-term residents. Because HB 403 directs that different surveys be developed for short and long-term residents, it was important for us to examine in what way, if any, different surveys should be directed to different residents. Based on previous resident surveys, we recognized that long-term residents had little familiarity with social workers, nor with being able to recall aspects of the admission process. For the pretest, questions in these areas were addressed only to those residents who indicated that they had been in the facility less than 3 months.

From pretest interviews we examined whether individual items were rated significantly differently by long and short-term residents. Table 1 shows individual items with significant differences for long and short-term residents.

Although these individual items show some significant differences, some of the difference is due to the greater number of missing/don't know responses from short-term residents. Over one-quarter (27.6%) of short-term residents were unable to answer whether they liked the activities, and 38% were unable to answer whether their clothes were lost or damaged in the laundry. None of the other items showed significant differences between short and long-term residents in their abilities to provide answers to questions. However, short-term residents were not the only ones who did not participate in activities or use the laundry service. We felt the best solution to the overall problem of non-participation/non-use of services was to insert

instructions for interviewers that direct them to skip activity and laundry questions if the resident indicates they do not use service or do not participate.

Despite differences in some individual items, none of the average domain scores showed any significant differences between short and long-term residents. For this reason, we elected to ask all questions from all domains, other than the social worker domain, to all residents. The admissions domain had a high proportion of missing and don't know answers. In their comments, many short-term residents indicated that a family member had handled their admission. For this reason, we elected to eliminate the admissions domain for all residents and retain those items on the family survey.

Table 1

Items with Significant Differences Between Short and Long-term Residents

		N	Mean	SD	t-value	p level and explanation
Like the activities	ST	21	2.19	1.29	-1.859	*Long term more satisfied
	LT	156	1.79	.86		
Satisfaction w/spiritual activities	ST	26	1.96	.71	-2.346	**Long term more satisfied
	LT	166	1.57	1.18		
Person to help during the week	ST	28	1.25	.44	1.796	*Short term more satisfied
	LT	173	1.49	.67		
Clothes damaged in in laundry	ST	18	3.67	.49	-1.738	*Short-term more satisfied
	LT	143	3.31	.86		
Food is tasty	ST	29	1.72	.92	2.151	*Short-term more satisfied
	LT	169	1.80	.89		
Need to know more about medical condition	ST	29	3.28	1.00	-2.106	*short-term more satisfied
	LT	170	2.85	1.02		

 * p ≤ .10
** p ≤ .05

Reliability Testing

Two strategies were used to test individual item reliability. Sixty-seven residents were re-interviewed by the same interviewer approximately two weeks after the original interview for test-retest item reliability. Seventy-one residents were re-interviewed by a different interviewer approximately two weeks after their original interview to examine inter-rater reliability. Correlations between item responses at Time 1 and Time 2 were examined, along with paired-sample T-tests that examine the differences between mean scores on each item at Time 1 and Time 2.

Table 2 lists items that were significantly different at Time 1 and Time 2 on either the test-retest or inter-rater reliability t-tests. As shown on the table, four out of the five items that showed significant inter-rater differences were negatively worded items in the original survey. These same items did not exhibit significant test-retest differences. For all of these items, the facilities received a higher average evaluation at Time 2 than at Time 1.

For test-retest reliability, five items showed significant differences between Time 1 and Time 2. Interestingly, these differences were in the opposite direction of the inter-rater differences, with respondents giving facilities worse scores at Time 2. For comparisons with the family survey, we also computed test-retest domain scores. Only the laundry domain showed significant differences between Time 1 and Time 2.

Given that none of the items showed consistent test-retest and inter-rater unreliability, and that the contributions of these items to domain reliability is high, we recommend keeping these items in the initial round of resident interviews. The small sample size, coupled with the statistical odds that for every 20 t-tests, one will be significant even when it is substantively not, suggests a need for further exploration of these items. When statewide data collection is completed the contribution of these items to overall satisfaction scores and scale/domain reliabilities should be reexamined. The value of negatively worded items is that they help avoid "response set" where participants begin answering every question with the same response category. It is also unclear why the administration items were problematic only in the test-retest. One theory was that changes in administration may have occurred that were driving the entire difference but a facility-by-facility examination proved that this was not the case. Slight differences in almost every facility contribute to the overall difference between Time 1 and Time 2.

Table 2

**Items with Significant Differences Between
Inter-Rates and Test-Retest Time 1 and Time 2**

		N	Mean	SD	t-value	p value and explanation
Do you have enough to do here?	Time 1 IR	70	2.64	2.07	-2.021	**better scores Time 2
	Time 2 IR	70	2.14	1.60		
Do staff decide when you have to get up in the morning?	Time 1 IR	64	2.86^a	1.34	-2.247	**better scores Time 2
	Time 2 IR	64	2.27^a	1.23		
Do staff decide when you keep your door open or closed	Time 1 IR	63	3.39^a	.93	-11.630	***better scores Time 2
	Time 2 IR	63	1.32^a	.66		
Do you have to wait too long for your medication?	Time 1 IR	66	3.44^a	.86	-9.154	***scores better Time 2
	Time 2 IR	66	1.64^a	.97		
Are there times when you don't get enough to eat here?	Time 1 IR	65	1.82^a	1.12	-2.168	**better scores Time 2
	Time 2 IR	65	1.55	.95		
Does the administration treat you with respect?	Time 1 TR	62	1.29	.46	2.529	**worse scores Time 2
	Time 2 TR	62	1.94	2.05		
Does the administration care about you as a person?	Time 1 TR	55	1.53	.60	2.597	**worse scores Time 2
	Time 2 TR	55	2.25	2.12		
Overall, how satisfied are you with the administration?	Time 1 TR	63	1.43	1.74	2.158	*worse scores Time 2
	Time 2 TR	63	1.89	.64		

		N	Mean	SD	t-value	p level and explanation
Are the nurses aides gentle when they take care of you?	Time 1 TR	63	1.30	.53	2.024	**worse scores Time 2
	Time 2 TR	63	1.65	1.45		
Do your clothes get lost in the laundry?	Time 1 TR	49	2.41	1.12	2.227	*worse scores Time 2
	Time 2 TR	49	2.06	.99		

   * $p \le .10$
  ** $p \le .05$
*** $p \le .001$
[a] recoded so that lower scores are better scores

Scale (Domain) Reliability

As shown in Table 3, all of the constructed domains show acceptable reliabilities of .60 or above, with the exception of the choice domain. However, because we recognize the importance of choice to consumers, we recommend leaving these items in. At the same time, we recommend that an overall scale/domain score not be presented for the choice domain items because of the low internal consistency of the scale. As discussed by the Advisory Council, it would be preferable to present some domain scores that could then be linked to the individual item results for each domain. Presentation of the choice and miscellaneous items should not be done by domain.

Table 3 Questions for Ohio Nursing Home Resident and Family Satisfaction Surveys

Resident Survey Only: 45 items for long-term and 48 for short-term.	Common Items. Words or phrases in brackets are differences in the family survey.	Family Survey Only: Total 62 items recommended.
		Admissions. 5 Items. Alpha: .78
		Did the staff provide you with <u>adequate</u> information about the different services in the facility?
		Did the staff give you <u>clear</u> information about the daily rate?
		Did the staff provide you with <u>adequate</u> information about any additional charges?
		Did the staff <u>adequately</u> address your questions about how to pay for care (private pay, Medicare, Medicaid)?
		Overall, were you satisfied with the <u>admission process</u>?
3 items ST only. Alpha: .88	**Social Services**	**4 Items. Alpha: .90**
	Does the social worker follow up and respond quickly to your concerns?	
	Does the social worker treat you with respect?	
		Does the social worker treat the resident with respect?
	Overall, are you satisfied with the quality of the social workers in the facility?	
6 Items. Alpha: .74	**Activities**	**6 Items. Alpha: .77**
	Do you (Does the resident) have enough to do here (in the facility)?	
	Are the activities here (facility's activities) things *that* you like (the resident likes) to do? IF RESIDENT DOESN'T KNOW OR DOESN'T PARTICIPATE, SKIP TO NEXT SECTION	

	Are you (Is the resident) satisfied with the spiritual activities (in the facility) *they offer* here?	
	Does (Do) the activities staff treat you (the resident) with respect?	
	Does (Do) the activities staff care about you (the resident) as a person?	
	Overall, are you satisfied with the activities (in the facility) *they offer* here?	
6 Items. Alpha: .55	**Choice**	**5 Items. Alpha: .66**
	Can you (the resident) go to bed when you (he/she) like (s)?	
Does the staff decide when you have to get up in the morning?		
	Can you (the resident) choose *the clothes that you (he/she)* wear(s)?	
	Can you (the resident) bring in belongings that make your (his/her) room feel homelike?	
Does the staff tell you when to keep your door open or closed?		
	Does (Do) the staff leave you (the resident) alone if you (he/she) *don't (doesn't) want to do anything*?	
		Does the resident have the opportunity to do as much as he/she would like to do for himself/herself?
		Receptionist/Phone. 2 Items. Alpha = .74**
		Are the telephone calls processed in an efficient manner?
		Is the receptionist helpful and polite?
10 Items. Alpha: .84	**Direct Care (and Nurse Assistants)**	**9 Items. Alpha: .89.**
		Does the resident look well-groomed and cared for?
	Does a staff person check on you (the resident) to see if you are	

	(he/she is) comfortable? (need a drink, a blanket, a change in position)	
	During the week, is a staff person available to help you (the resident) *if* you (he/she) need(s)it (help getting dressed, help getting things)?	
	During the weekends, is a staff person available to help you (the resident) *if* you (he/she) need(s)it (help getting dressed, help getting things)?	
	*During the evening and night, is a staff person available to help you (the resident) if you (he/she) need(s) it (get a blanket, get a drink, needs a change in position)?**	
Do you feel that you have to wait too long for your medications?		
Do you have the opportunity to do as much as you *would like to do* for yourself?		
	Are the nurse aides gentle when they take care of you (the resident)?	
	Do the nurse aides treat you (the resident) with respect?	
	Do the nurse aides care about you (the resident) as a person?	
	Overall, are you satisfied with the nurse aides who care for you (the resident)?	
		Professional Nurses (RNs and LPNs) 2 Items. Alpha: =.87
		Do the Registered Nurses and Licensed Practical Nurses (RNs and LPNs) follow up and respond quickly to your concerns?
		Overall, are you satisfied with the quality of the RNs and LPNs in the facility?

		Therapy (Important for ST residents♠). 2 Items. Alpha =.91**
(These items predicted only 2% of variance in overall satisfaction for short-term residents and were omitted)		
		Does the physical and/or occupational therapist spend enough time with the resident?
		Overall, are you satisfied with the care provided by the therapists in the facility?
4 Items. Alpha: .83	**Administration**	**5 Items. Alpha: .87**
	Is the administration available to talk with you?	
		Does the administration treat you with respect?
	Does the administration treat you (the resident) with respect?	
	Does the administrator care about you (the resident) as a person?	
	Overall, are you satisfied with the administration here?	
5 Items. Alpha: .81	**Meals and Dining**	**5 Items. Alpha: = .81**
	Is the food here (does the resident think that the food is) tasty?	
	Are foods served at the right temperature (cold foods cold, hot foods hot)? (*Delete "that is" phrase)*	
	Can you (the resident) get *the* foods you (he/she) like(s)?	
	Are there times when you (the resident) don't (doesn't) get enough to eat? (*delete "here"*)	
	Overall, are you satisfied with the food here (in the facility)?	
2 Items. Alpha: .63	**Laundry**	2 Items. Alpha: .75**
	Do your (the resident's) clothes get lost in the laundry?	
	Do your (the resident's) clothes get damaged in the laundry?	
6 Items. Alpha: .69	**Environment**	**7 Items. Alpha: .85**
		Are there enough comfortable places for residents to sit outdoors?

Is your room a comfortable temperature? (*Delete "that is" phrase*)		
	Can you find places to talk *with your* visitors (the resident) in private?	
		Noise: 2 Items. Alpha: =.79
		Does the noise in the resident's room bother you?
		Does the noise in the public areas bother you?
	Environment (continued)	
	Are you satisfied with your (the resident's) room?	
		Does the facility seem homelike?
	Do you think the facility should be cleaner?	
	Are your (the resident's) belongings safe here (no 'here' in the family survey)?	
	Are you satisfied with the safety and security of this facility?	
5 Items. Alpha: .75	**General Satisfaction**	**5 Items. Alpha: .78****
	Are there times when the staff get you upset?	
		Are there times when other residents get you upset?
Overall, do the staff and residents help each other and get along?		
Overall, are you satisfied with the friendliness of the staff?		
1 Item	**Miscellaneous**	1 Item**
	Do you get <u>adequate</u> information from the staff about your (the resident's) medical condition and treatment?	
	General Satisfaction (continued)	
		Overall, are you satisfied with the medical care in the facility?

| | Would you recommend this facility to a family member or friend? | |
| | Overall, are you satisfied with the quality of care *you (the resident) get(s) here* (in the facility)? | |

Note: Words in italics are changes from original questionnaire based on findings from behavioral coding**.** Underlined items reflect changes in wording necessary to use different frequency response categories.

** These items were not part of or did not factor in with the initial factor analyses but we suggest adding these items based on conceptual relevance to domains of satisfaction. Alphas are reported for these newly created domains, where appropriate.

Cognitive Interviews with 9 residents after pretest confirm the following response categories:
- Always
- Sometimes
- Hardly Ever
- Never
- Don't Know/Not Familiar with Service

September 6, 2012

Cognitive Screening

One goal of the pretest was to examine the extent to which residents with different levels of cognitive impairment were able to complete an interview. Table 4 shows the performance levels of residents on different measures of cognitive ability. In short, residents at all levels of cognitive impairment completed interviews, suggesting that we have simplified responses and questions in such a way that many residents will be able to participate. On the other hand, the distribution of scores suggests that in sampling, nursing homes may have screened out residents other than those who were comatose, or those who were severely impaired in decision-making and dependent in eating. The range of scores here do not mirror what one would typically expect of a nursing home resident population. In fact, only four interviews were terminated because residents were unable to participate. In order to assess appropriate cutpoints for screening residents out on a cognitive screen more non-completions would have been helpful. However, we were able to identify a group of cognitive variables that have good predictive ability for whether the residents were perceived by interviewers as having trouble understanding the questions. We first eliminated all residents who had serious hearing impairment, as that would also contribute to difficulties in understanding questions. We then conducted a number of regressions with the cognitive variables, and finally performed discriminant analyses. Four variables correctly classified 81.8% of the cases as to whether they did or did not have trouble understanding the questions. These are: 1)None recalled from the Memory/Recall Ability section of the MDS, 2)the current season, 3)the day of the week, and 4)the time of day.

Our protocol of instructions to facilities ask them to prepare lists of residents from the MDS, and residents who recall none of the memory items will also be screened out from the resident sample. Interviewer training materials will still continue to use the "four consecutive unanswered questions" as the cutoff for terminating interviews. The other three items will continue to asked as a cognitive screen with the hope of determining at what level resident participation should not go beyond the cognitive screening section of the interview. Table 5 suggests that half of those with scores of zero on the new cognitive screen are still able to complete an interview. It may be possible that after a larger study that will result in larger numbers of terminated interviews we will be able to see a clearer pattern, or if no clear pattern emerges, the cognitive screen should be dropped.

Table 4

Cognitive Performance of Nursing Home Residents
Able to Complete Interviews

Scores on MDS Cognitive Performance Scale

0	26.8%
1	24.4%
2	23.4%
3	23.4%
4	1.0%
5	.5%
6	.5%

Scores on Brief Cognitive Screen

1	.5%
2	17.6%
3	82.0%

Scores on Brief Mini-Mental Status Exam (MMSE) Without Spelling Task

4	2.0%
5	2.0%
6	4.4%
7	5.4%
8	7.8%
9	11.7%
10	17.1%
11	49.8%

Table 5

Completed Interview Participants Who Had Problems Understanding
Questions and Apparent Mental Confusion by Their Scores
On Proposed Cognitive Screen

	Scores			
	0	1	2	3
% who had problems understanding question	50%	35.0%	18.0%	3.9%
% who exhibited apparent mental confusion	50%	25.0%	10.0%	2.3%

Criterion Validity

One strategy for assessing the validity of survey items is to determine how they relate to other measures that are known to measure the same phenomenon that the new items measure. In this study, we examined the extent to which each individual domain predicted two measures of overall nursing home satisfaction—one's overall satisfaction with the quality of care in the facility, and whether one would recommend the facility to a family member or friend. Table 6 shows the results of ordinary least squares (OLS) regressions of the items in each domain on the two dependent variables: overall satisfaction with quality of care, and whether one would recommend the facility.

As shown in Table 6, all domains except for social services result in statistically significant predictive models of the variance in overall satisfaction with quality of care and whether one would recommend the facility to a friend. Interestingly, the domains that are most closely related to the general satisfaction items are respectively, environment, direct care, and the three general satisfaction items that deal with relationships between staff and residents. The ordering of these items suggests that a first order need for residents is that of safety and hygiene—basic security issues, and once that is met, residents focused on the care they receive and the relationships with those who provide that care.

Other research has examined the role of resident characteristics and their impact on satisfaction. In this study, minimal demographic information was collected on residents since HB 403 requires only age and gender to be reported as resident characteristics. However, previous meetings of the LTC Advisory Council have explored whether satisfaction varies with different types of residents, and whether satisfaction scores might need to be "case-mix" adjusted. One strategy for doing this would be to report statewide averages among like facilities in terms of facility case-mix.

As shown in Table 7, the survey items predict different amounts of overall satisfaction for different kinds of residents. While the overall predictive power of survey items is high (.37 and .62) it becomes even higher when the model is run separately according to gender, mental confusion, and frailty.

We divided residents into two groups based on their level of apparent mental confusion and conducted T-tests on each domain score. Only one scale, social workers, shows a significant difference between those who are confused and those who are not. None of the others are

Table 6

Domains and All Items Regressed On Overall
Satisfaction with Quality of Care and Recommending Nursing Home

Domain	N	Adj. R^2-Overall Sat.	Adj. R^2-Recommend to Others
Social Services (3 items)	28	-.04	-.09
Activities (6 items)	201	.09***	.11***
Choice (6 items)	202	.12***	.19***
Administration (4 items)	203[a] 201[b]	.03*	.12***
Direct Care and Nurse Aides (10 items)	195	.30***	.37***
Environment (6 items)	194	.31***	.43***
Meals and Dining (5 items)	192	.11***	.16***
Other General Sat. (Relationships w/staff- 3 items)	201[a] 200[b]	.24***	.32***
All Items Combined	187	.37***	.62***

* $p \le .05$

*** $p \le .001$

[a] N on overall quality regression

[b] N on recommend to others

NOTE: Laundry domain excluded from individual domain analysis and both social worker and laundry domains excluded from "all items" regression

Table 7

**Separate Models Based on Demographic Characteristic
Of Survey Items Regressed on
Overall Satisfaction With Quality of Care and Recommending Nursing Home**

Domain	N	Adj. R^2-Overall Sat.	Adj. R^2-Recommend to Others
Gender			
Male	67	.44**	.77***
Female	114	.48***	.66***
Apparent Mental Confusion			
Yes	14	.94	
No	84	.63	[a]
Frailty			
Yes	48	.66*	.84**
No	48	.91***	.70*

   * $p \leq .10$
  ** $p \leq .05$
*** $p \leq .001$
    [a] Model unstable because of small sample size

significantly different. In addition, there are not consistent differences in the direction of the scores—neither group consistently gives lower ratings.

A comparison of scale means for frail residents compared to those with little or no frailty shows different mean scores on every scale, with frail residents consistently reporting lower satisfaction. However, only one scale shows a significant difference (p value .013) although the administration and direct care domains approach significance (p values .076 and 069 respectively).

Based on these findings, we recommend adding the following questions:

1. How would you rate your health? Excellent, Good, Fair, or Poor?

2. What is your race? Caucasian, African-American, Hispanic, or Other?

3. Are you able to dress on your own without help? Always, Sometimes, Hardly ever, Never

4. Are you able to get in and out of bed on your own without help?

5. Are you able to use the bathroom on your own without help?

6. Are you able to eat on your own without help?

Because the average interview time was 22 minutes for the 67 item pretest questionnaire, the addition of these items to the final questionnaire will not place the average interview time over twenty minutes.

Last, we recommend keeping the interviewer observation section of the questionnaire, particularly those items which cover difficulties with understanding questions, apparent mental confusion, and other types of impairments.

Summary

Although we observed some inter-rater and test-retest differences for several questions, none of the differences were consistent and for that reason, we elected to retain all of the items. A careful reexamination of the contribution of each of these items to overall satisfaction, as well as scale/item correlations should be conducted again with the larger sample. We also established cognitive screening items, but with only a few residents who were unable to complete interviews it is still not clear what an appropriate cutoff if any, should be. Again, we recommend a reexamination of these items after the larger statewide survey.

It is clear from the pretest that residents of varying levels of cognitive impairment can complete this resident satisfaction interview. It is also clear that these items, taken as a whole, provide a valid measure of nursing home satisfaction. Finally, the item domains we have created show strong internal reliability suggesting their usefulness for presentation of summary domain scores. The sampling paper in Appendix B suggests some strategies for presentation of this information.

Because different types of residents show differences in the extent to which these survey items explain overall satisfaction, we recommend that some additional information about resident characteristics be collected. Future research should be directed towards examining whether state average satisfaction scores should be case-mix adjusted.

Our pretest highlights some areas for future research and examination of the resident satisfaction data when interviews are conducted with a statewide sample. The pretest was

valuable in determining items and domains that should be constructed, and examining short and long-term residents but was less conclusive in providing absolute cutpoints for a cognitive screen, and our ability to examine whether significant differences exist among different types of residents. As the ONHRSS is administered over time to a larger sample these questions will be more easily addressed.

Appendix A

INSTRUCTIONS TO FACILITIES PARTICIPATING IN THE OHIO RESIDENT SATISFACTION SURVEY

THANK YOU FOR PARTICIPATING IN THE OHIO NURSING HOME RESIDENT SATISFACTION SURVEY. ON THE DAY BEFORE THE INTERVIEWERS ARE SCHEDULED TO ARRIVE IN YOUR FACILITY:

1. Determine if there is a room (lounge, conference room, empty resident room) that can be used for interviewing.

2. Print a list of ALL residents in the nursing home portion of your facility, along with their room numbers.

3. <u>Using the MDS</u>, prepare lists of residents who are:
   a. Comatose
   b. Severely Impaired in Decision-Making
   c. Dependent in Eating
   d. Unable to recall any of the items on the memory/recall portion of the MDS (NONE ARE RECALLED).

4. Let staff know that interviewers will be in the facility the following day.

5. Encourage staff to assist interviewers in locating residents.

6. Let staff know they should not interrupt interviews in progress. If they need to talk with a resident, deliver something to a resident room, etc. they should come back when the interview is completed.

WHEN INTERVIEWERS ARRIVE IN YOUR FACILITY:

1. Provide resident lists (above) to interviewers when they arrive.

2. Show them the interview room(s) if any.

3. Indicate which residents are out of the facility for the day.

4. Provide a brief tour or map of the facility so they can easily locate resident rooms.

Thank you for your assistance! Your facility will receive a report of the results when they are completed.

Ohio Department of Aging

50 West Broad Street/9th Floor, Columbus, Ohio 43215-3363   Bob Taft, Governor

(614)466-5500   TDD (614)466-6191   FAX (614)466-5741

Dear Resident,

The Ohio Department of Aging needs your opinion about the nursing home where you are staying. We are developing a Long-Term Care Consumer Guide for people who are choosing a nursing home. We need your help. Your opinion about your nursing home is important because we want to hear from residents of every facility in Ohio.

The interviewer who is visiting you today will ask you some questions about your nursing home. The interview will only take about 15 minutes of your time. Only the interviewer will know your answers to the questions; no one else will know what you said. When we have interviewed other residents in your facility, all of the answers will be combined to give us a summary of residents' opinions about your nursing home.

I hope you will agree to help us by taking the time to answer our questions. Your opinions will help others make the nursing home choice that is right for them. If you have any questions about the Long-Term Care Consumer Guide, please call JoEllen Skelley-Walley at the Ohio Department of Aging at 1-800-282-1206. Stay on the line and respond to the prompts. Thank you for your help in letting others know about your nursing home.

Sincerely,

Joan Lawrence, Director
Ohio Department of Aging

OHIO NURSING HOME RESIDENT SATISFACTION SURVEY
(**ONHRSS**)

Introducing yourself:
- Introduce yourself to resident. Explain why you are there, and ask for a few minutes of time.
- Describe a little bit about the project, and ask if they are willing to talk with you. (See example script).

Setting the stage:
- When you contact the facility you will determine whether there is a room available that you can use for interviews. If not, when you find the resident, ask the resident if there is somewhere you can meet privately (*their room, a quiet corner in a lounge, an unused part of the dining room*.)
- Ask if it's OK to close the door, move furniture as necessary to create a place for you to sit close to the resident for the interview. Put hanger on door to avoid interruptions.

Presenting information and getting consent:
- Ask the resident if they would prefer to read the study information sheet or to have you read it to them.
- Get verbal agreement to participate in interview.

Cognitive Screen:
- Administer Ohio Nursing Home Resident Brief Cognitive Screen.
- Record ID number in top right using information from screen.

Getting started:
- Read Introductory Script
- Begin interview.

During the Interview:
- **Do not** offer the "Don't know" response to the resident. If a respondent answers with "don't know," use one probe from examples in the training materials. If they still don't know, mark "don't know" and move on.
- If the resident says they don't go (i.e. activities), mark "don't know" without probes and go on to the next question.
- If the resident has trouble understanding the question repeat it or use acceptable explanations given on survey form (Only use explanations when necessary.).

Terminating Interview due to Difficulty:
- If they are **unable to choose a response** (either yes or no) **for four consecutive questions**, (unless they indicate they have no experience with that) thank them for their participation by reading the ending script at back and **discontinue interview**. This

termination instruction applies to residents who do not have the decision-making ability to either understand the question or to choose an answer.

Terminating Interview due to Resident Request:
- If they indicate that they do not wish to continue, ask if they would like to continue on another day, or after a break. If so, record time next to last question answered, and record new starting time next to the beginning question when interview resumes.
- If they do not want to complete interview, thank them for their time and record end time at end of interview.

Exiting:
- Thank the resident for their time.

For every resident you will return:
- Completed interview.

*RECORD TIME NOW*_____ **Resident ID**_____

Ohio Nursing Home Resident Brief Cognitive Screen   (initialsbirthdate—xxxmmddyy)

Before we begin I'm going to ask you some questions. You may think some of them are silly, but they help us to learn a little bit about how you're thinking today.

1. What is your date of birth?_____
2. How old are you today?_____

[IF AGE SEEMS UNLIKELY, VERIFY AND CORRECT WITH OFFICE BEFORE LEAVING FACILITY. THIS INFORMATION IS REQUIRED BY HB. 403.]

	Response	**Points**	**Score**
1. What is the Day of the Week?	_____	1	_____
2. What is the Season?	_____	1	_____
3. What time is it?	_ _____	1	_____

*[**CORRECT RESPONSES WITHIN ONE HOUR GIVEN 1 POINT. CAN LOOK AT WATCH, LOOK AT CLOCK, INTERVIEWER SHOULD TRY NOT TO SHOW WATCH**.]*

TOTAL___

*RECORD TIME NOW*_____

I'm going to ask you some questions about this facility. When we talk about this facility, we mean this [NURSING HOME, HOSPITAL UNIT, REHAB FACILITY]. I am interested in your opinions—there are no right or wrong answers. After asking each question I will ask you to choose your answer from a list of choices I will read to you. These choices are always, sometimes, hardly ever, or never. Always means that you can count on something, that it ALWAYS happens or is ALWAYS true, sometimes means that it may not happen all of the time, but happens very often, or is true very often; hardly ever means something you really can't count on, but it might happen, or something that you almost never feel is true; and never means something that you can be sure won't happen, or hasn't ever happened; or something that you don't ever feel is true. I will also show you a card with your answer choices. Do you have any questions before we begin?
_____

THIS FIRST GROUP OF QUESTIONS IS FOR YOU IF YOU HAVE BEEN HERE FOR ONLY A SHORT TIME, THAT IS LESS THAN THREE MONTHS.

1. How long have you been at this facility?_____

   More than three months_____ (SKIP TO #5, Page 1)
   Less than three months_____

SOCIAL SERVICES (3 ITEMS)

NOW I'M GOING TO ASK YOU SOME QUESTIONS ABOUT THE SOCIAL WORKERS OR THE SOCIAL SERVICES HERE.

2. Does the Social Worker follow-up and respond quickly to your concerns? Yes or no?

   Yes → Would you say yes, always   _____
                      Or yes, sometimes   _____
   No → Would you say no, hardly ever   _____
                      Or no, never   _____
   Don't know/ don't use service   _____

3. Does the Social Worker treat you with respect? Yes or no?
   (If asked, By respect, I mean are the social workers polite, listen to what you say, care about your feelings?)

   Yes → Would you say yes, always   _____
                      Or yes, sometimes   _____
   No → Would you say no, hardly ever   _____
                      Or no, never   _____
   Don't know/ don't use service   _____

4. Overall, are you satisfied with the quality of the social worker in the facility? Yes or no?

           Yes → Would you say yes, always   _____

                       Or yes, sometimes   _____

           No → Would you say no, hardly ever   _____

                       Or no, never   _____

           Don't know/ don't use service   _____

ACTIVITIES (6 ITEMS)

I'D LIKE YOU TO THINK ABOUT ALL OF THE ACTIVITIES THE FACILITY ORGANIZES TO ENTERTAIN YOU OR TO KEEP YOU INVOLVED.

5. Do you have enough to do here? Yes or No?

           Yes → Would you say yes, always   _____

                       Or yes, sometimes   _____

           No → Would you say no, hardly ever   _____

                       Or no, never   _____

           Don't know/ don't participate   _____

       (IF RESPONDENT SAYS DON'T KNOW/DON'T PARTICIPATE, SKIP TO #11)

6. Are the activities here things that you like to do? Yes or No?

           Yes → Would you say yes, always   _____

                       Or yes, sometimes   _____

           No → Would you say no, hardly ever   _____

                       Or no, never   _____

           Don't know/ don't participate   _____

7. Are you satisfied with the spiritual activities they offer here? Yes or No?
    (If asked, By spiritual activities I mean things like prayer, counseling, and religious services.)

           Yes → Would you say yes, always   _____

                       Or yes, sometimes   _____

           No → Would you say no, hardly ever   _____

                       Or no, never   _____

           Don't know/ don't participate   _____

8. Does the activities staff treat you with respect? Yes or no?
    (If asked, By respect, I mean are the activities staff polite, listen to what you say, care about your feelings?)

           Yes → Would you say yes, always   _____

                       Or yes, sometimes   _____

           No → Would you say no, hardly ever   _____

                       Or no, never   _____

           Don't know/ don't use service   _____

9. Does the activities staff care about you as a person? Yes or no?

        Yes → Would you say yes, always   _____

                    Or yes, sometimes   _____

        No → Would you say no, hardly ever   _____

                    Or no, never   _____

        Don't know/ don't use service   _____

10. Overall, are you satisfied with the activities they offer here? Yes or no? (*If asked: The activities in the facility, the outings, the staff?*)

        Yes → Would you say yes, always   _____

                    Or yes, sometimes   _____

        No → Would you say no, hardly ever   _____

                    Or no, never   _____

        Don't know/ don't use service   _____

CHOICE (6 ITEMS)
I'D LIKE YOU TO THINK NOW ABOUT THE CHOICES YOU HAVE HERE.

11. Can you go to bed when you like? Yes or no?

        Yes → Would you say yes, always   _____

                    Or yes, sometimes   _____

        No → Would you say no, hardly ever   _____

                    Or no, never   _____

        Don't know   _____

12. Does the staff decide when you have to get up in the morning? Yes or no?

        Yes → Would you say yes, always   _____

                    Or yes, sometimes   _____

        No → Would you say no, hardly ever   _____

                    Or no, never   _____

        Don't know   _____

13. Can you choose the clothes that you wear? Yes or no?

        Yes → Would you say yes, always   _____

                    Or yes, sometimes   _____

        No → Would you say no, hardly ever   _____

                    Or no, never   _____

        Don't know   _____

14. Can you bring in belongings that make your room feel homelike? Yes or no?

        Yes → Would you say yes, always   _____

                    Or yes, sometimes   _____

        No → Would you say no, hardly ever   _____

                    Or no, never   _____

        Don't know   _____

15. Does the staff tell you when to keep your door open or closed? Yes or no?

           Yes → Would you say yes, always   _____

                           Or yes, sometimes   _____

           No → Would you say no, hardly ever   _____

                           Or no, never   _____

           Don't know   _____

16. Does the staff leave you alone if you don't want to do anything? Yes or no?

           Yes → Would you say yes, always   _____

                            Or yes, sometimes   _____

           No → Would you say no, hardly ever   _____

                           Or no, never   _____

           Don't know   _____

DIRECT CARE and NURSE ASSISTANTS (10 ITEMS)
THE NEXT QUESTIONS ARE ABOUT THE HELP YOU GET HERE.]

17. Does a staff person check on you to see if you are comfortable? Yes or no? (*If asked, ask if you need a blanket, if you need a drink, if you need a change in position?*)

           Yes → Would you say yes, always/most of the time _____

                           Or yes, sometimes   _____

           No → Would you say no, hardly ever   _____

                           Or no, never   _____

           Don't know/ don't use service   _____

18. During the week, is there a staff person available to help you if you need it? Yes or no?

(If asked, help getting dressed, getting things for you?)

           Yes → Would you say yes, always   _____

                            Or yes, sometimes   _____

           No → Would you say no, hardly ever   _____

                           Or no, never   _____

           Don't know/ don't use service   _____

19. During the weekends, is there a staff person available to help you if you need it? Yes or no? *(If asked, help getting dressed, getting things for you?)*

           Yes → Would you say yes, always   _____

                            Or yes, sometimes   _____

           No → Would you say no, hardly ever   _____

                           Or no, never   _____

           Don't know/ don't use service   _____

20. During the evening and night, is there a staff person available to help you if you need it?

        Yes → Would you say yes, always   _____
                       Or yes, sometimes   _____
        No → Would you say no, hardly ever   _____
                       Or no, never   _____
        Don't know/ don't use service   _____

21. Do you feel that you have to wait too long for your medications?

        Yes → Would you say yes, most of the time   _____
                       Or yes, sometimes   _____
        No → Would you say no, hardly ever   _____
                       Or no, never   _____
        Don't know   _____

22. Do you have the opportunity to do as much as you would like to do for yourself?

        Yes → Would you say yes, most of the time   _____
                       Or yes, sometimes   _____
        No → Would you say no, hardly ever   _____
                       Or no, never   _____
        Don't know   _____

I'D LIKE YOU TO THINK NOW ABOUT THE PEOPLE WHO PROVIDE MOST OF YOUR CARE HERE. AT SOME FACILITIES THEY ARE CALLED NURSE AIDES; OTHERS CALL THEM NURSING ASSISTANTS.

23. Are the nurse aides gentle when they take care of you? Yes or no?

        Yes → Would you say yes, most of the time   _____
                       Or yes, sometimes   _____
        No → Would you say no, hardly ever   _____
                       Or no, never   _____
        Don't know/ don't use service   _____

24. Do the nurse aides treat you with respect? Yes or no?
(If asked, By respect, I mean are the nurse aides polite, listen to what you say, care about your feelings?)

        Yes → Would you say yes, most of the time   _____
                       Or yes, sometimes   _____
        No → Would you say no, hardly ever   _____
                       Or no, never   _____
        Don't know/ don't use service   _____

25. Do the nurse aides care about you as a person? Yes or no?

    Yes → Would you say yes, most of the time   _____

                    Or yes, sometimes   _____

    No → Would you say no, hardly ever   _____

                   Or no, never   _____

    Don't know/ don't use service   _____

26. Overall, are you satisfied with the nurse aides here? Yes or no?

    Yes → Would you say yes, most of the time   _____

                    Or yes, sometimes   _____

    No → Would you say no, hardly ever   _____

                   Or no, never   _____

    Don't know/ don't use service   _____

ADMINISTRATION (*4 ITEMS*)

THE NEXT FEW QUESTIONS ARE ABOUT THE ADMINISTRATION HERE. THE ADMINISTRATION IS THE MANAGEMENT, OR THE PEOPLE IN CHARGE

27. Is the administration available to talk with you? Yes or no?

    Yes → Would you say yes, always   _____

                    Or yes, sometimes   _____

    No → Would you say no, hardly ever   _____

                   Or no, never   _____

    Don't know/ don't talk to them   _____

28. Does the administration treat you with respect? Yes or no?

        (If asked, By respect, I mean is the administration polite, listen to what you

    say, care about your feelings?)

    Yes → Would you say yes, always   _____

                    Or yes, sometimes   _____

    No → Would you say no, hardly ever   _____

                   Or no, never   _____

    Don't know/ don't talk to them   _____

29. Does the administration care about you as a person? Yes or no?

    Yes → Would you say yes, always   _____

                    Or yes, sometimes   _____

    No → Would you say no, hardly ever   _____

                   Or no, never   _____

    Don't know/ don't talk to them   _____

30. Overall, are you satisfied with the administration here? Yes or no?

Yes → Would you say yes, always	_____
Or yes, sometimes	_____
No → Would you say no, hardly ever	_____
Or no, never	_____
Don't know/ don't talk to them	_____

MEALS AND DINING (5 ITEMS)
I WANT YOU TO THINK NOW ABOUT THE FOOD AND MEALTIME.

31. Is the food here tasty? Yes or no?

Yes → Would you say yes, most of the time	_____
Or yes, sometimes	_____
No → Would you say no, hardly ever	_____
Or no, never	_____
Don't know	_____

32. Are foods served at the right temperature?

Yes → Would you say yes, most of the time	_____
Or yes, sometimes	_____
No → Would you say no, hardly ever	_____
Or no, never	_____
Don't know	_____

33. Can you get the foods you like? Yes or no?

Yes → Would you say yes, most of the time	_____
Or yes, sometimes	_____
No → Would you say no, hardly ever	_____
Or no, never	_____
Don't know/ don't use service	_____

34. Are there times when you don't get enough to eat? Yes or no?

Yes → Would you say yes, most of the time	_____
Or yes, sometimes	_____
No → Would you say no, hardly ever	_____
Or no, never	_____
Don't know	_____

35. Overall, are you satisfied with the food here? Yes or no?

Yes → Would you say yes, most of the time	_____
Or yes, sometimes	_____
No → Would you say no, hardly ever	_____
Or no, never	_____
Don't know	_____

NEXT I'D LIKE YOU TO THINK ABOUT THE LAUNDRY SERVICE HERE.

36. Do your clothes get lost in the laundry? Yes or no?

Yes → Would you say yes, most of the time _____

Or yes, sometimes _____

No → Would you say no, hardly ever _____

Or no, never _____

Don't know/ don't use service _____

(*IF RESIDENT INDICATES THAT FACILITY DOES NOT DO THEIR LAUNDRY, SKIP NEXT QUESTION*)

37. Do your clothes get damaged in the laundry?

Yes → Would you say yes, most of the time _____

Or yes, sometimes _____

No → Would you say no, hardly ever _____

Or no, never _____

Don't know/ don't use service _____

ENVIRONMENT (6 ITEMS)

WE'VE BEEN TALKING ABOUT THE PEOPLE WHO WORK HERE AND THE THINGS THEY DO, BUT NOW I'D LIKE YOU TO THINK ABOUT YOUR ROOM AND THE BUILDING.

38. Is your room a comfortable temperature? Yes or no?

Yes → Would you say yes, most of the time _____

Or yes, sometimes _____

No → Would you say no, hardly ever _____

Or no, never _____

Don't know _____

39. Can you find places to talk with your visitors in private? Yes or no?

Yes → Would you say yes, most of the time _____

Or yes, sometimes _____

No → Would you say no, hardly ever _____

Or no, never _____

Don't know/ don't have visitors _____

40. Are you satisfied with your room? Yes or no?

Yes → Would you say yes, most of the time _____

Or yes, sometimes _____

No → Would you say no, hardly ever _____

Or no, never _____

Don't know _____

41. Do you think this facility should be cleaner? Yes or no?

                Yes → Would you say yes, most of the time   _____
                          Or yes, sometimes   _____
                No → Would you say no, hardly ever   _____
                          Or no, never   _____
                Don't know   _____

42. Are your belongings safe here? Yes or no?

                Yes → Would you say yes, most of the time   _____
                          Or yes, sometimes   _____
                No → Would you say no, hardly ever   _____
                          Or no, never   _____
         Don't know   _____

43. Are you satisfied with the safety and security of this facility? Yes or no?

                Yes → Would you say yes, most of the time   _____
                          Or yes, sometimes   _____
                No → Would you say no, hardly ever   _____
                          Or no, never   _____
                Don't know   _____

OVERALL SATISFACTION (6 ITEMS)
THIS LAST GROUP OF QUESTIONS ASKS YOU TO THINK ABOUT THE FACILITY IN GENERAL.

44. Are there times when the staff get you upset?

                Yes → Would you say yes, most of the time   _____
                          Or yes, sometimes   _____
                No → Would you say no, hardly ever   _____
                          Or no, never   _____
                Don't know   _____

45. Overall, do the staff and residents help each other and get along? Yes or no?

                Yes → Would you say yes, most of the time   _____
                          Or yes, sometimes   _____
                No → Would you say no, hardly ever   _____
                          Or no, never   _____
                Don't know   _____

46. Overall, are you satisfied with the friendliness of the staff? Yes or no?

     Yes → Would you say yes, most of the time   _____
            Or yes, sometimes   _____
     No → Would you say no, hardly ever   _____
            Or no, never   _____
     Don't know   _____

47. Do you get adequate information from the staff about your medical condition and treatment? Yes or no?

     Yes → Would you say yes, always   _____
            Or yes, sometimes   _____
     No → Would you say no, hardly ever   _____
            Or no, never   _____
     Don't know   _____

48. Would you recommend this facility to a family member or friend? Yes or no?

     Yes → Would you say yes, most of the time   _____
            Or yes, sometimes   _____
     No → Would you say no, hardly ever   _____
            Or no, never   _____
     Don't know   _____

49. Overall, are you satisfied with the quality of care you get here? Yes or no?

     Yes → Would you say yes, most of the time   _____
            Or yes, sometimes   _____
     No → Would you say no, hardly ever   _____
            Or no, never   _____
     Don't know   _____

THOSE ARE ALL THE QUESTIONS I HAVE ABOUT THIS FACILITY. IS THERE ANYWHERE ELSE YOU WOULD LIKE TO TELL ME ABOUT STAYING HERE?
(_RECORD ANSWERS ON BACK_**.)**
  RECORD TIME NOW _____

INSTRUCTIONS TO INTERVIEWER: *Complete the following questions immediately after meeting with the resident.*

1. Gender of Respondent   Male   0

                                                  Female   1

2. Did respondent have any problems understanding the questions?

_____None_____A few   _____Some   _____Many   _____A Great Deal
                  Problems   Problems   of Difficulty

3. Apparent disabilities…..

	None at all	A Little	Somewhat	Much	Very Much
a. Hearing Impairment	1	2	3	4	5
b. Difficulty Reading Responses	1	2	3	4	5
c. Mental Confusion	1	2	3	4	5

4. Please indicate respondent's attitude toward you and the interview.
___Very   ___Cooperative   ___Indifferent ___Somewhat ___Hostile
Cooperative   or Apathetic   Hostile

5. Was resident disturbed or upset at any part of the interview?
___Not at all   ____A little   ____Somewhat   _____Much   ____Very
                                                                         Much
(If somewhat, much or very much…)What part?_____
What reaction?(angry, tears, annoyed)_____

6. How frail does respondent appear to you?
___Not at all   ____A little   ____Somewhat   _____Much   ____Very
                                                                          Much

OTHER OBSERVATIONS ABOUT THE RESIDENT, **RESIDENT'S ROOM, etc**.

YOUR NAME_____
TODAY'S DATE_____ _____

Appendix B

Sampling Plan and Summary Statistics for the Ohio Nursing Home Consumer Satisfaction Survey

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1. INTRODUCTION

The consumer satisfaction evaluation process collects data from Ohio nursing home residents and their families on their degree of satisfaction with the services received from nursing homes. This is accomplished via two separate instruments: a resident survey and a family survey. These surveys collect data about each facility in Ohio to: (i) provide information about the quality of the program or care received by residents; and (ii) compare the quality of care and services across nursing home facilities. This technical report is a by-product of the Nursing Home Consumer Satisfaction Survey sponsored by the Ohio Department of Aging. The purpose of this report is two-fold: (i) to develop and illustrate an appropriate sampling plan; and (ii) to provide methods of combining information from nursing homes of various sizes, into a statewide summary. Finally, suggestions for displaying summary statistics related to these surveys is provided.

2. METHODS

2.1 Sample Survey Design – Stratified Random Sampling

One of the goals of this sample survey design is to obtain representative information so that the findings can be generalized for the entire population. In our survey, the population of all Ohio nursing home residents is divided amongst approximately 1000 facilities, or in statistical jargon, strata. Thus, these facilities serve as 1000 strata for selecting the sample residents (or family

members) and carrying out the interviews. Use of these strata maximizes the amount of survey information obtained for a given time and cost. In addition, facility-specific characteristics are easily calculated from these data. As we take each facility to be a stratum in this survey, the sampling is done separately and independently within each facility.

For each facility, the sampled residents are interviewed and complete a resident questionnaire. However, the family members' responses are obtained via mailed family member questionnaires only.

In addition, the principle of stratification is utilized to partition the population in such a way that units within stratum are as similar as possible (see, e.g., Ch. 4, Lohr 1999). Then, even though one facility may differ markedly from another, a stratified sample, with the desired number of residents from each nursing home in the population, will tend to be "representative" of the population as a whole. In this survey, we are assuming that each of the 1000 nursing homes has similar characteristics among residents within the facility. Thus, we expect to see relatively smaller response variability within each facility in contrast to variability between facilities, because the residents within each facility are relatively similar. This seems to be a reasonable assumption, given that facilities who specialize in particular types of care are likely to attract residents in need of a particular package of services.

2.1.1 Resident Survey

In mathematical notation, our stratified random sample results from a sampling plan in which a population of all nursing home residents is divided into L (~1000) mutually exclusive and exhaustive groups (facilities), and a simple random sample of n_i elements (residents) is taken from within each facility or stratum i. Due to the presence of some cognitively impaired residents, we redefine our population N, as all residents who are cognitively able to respond to the interviewer's questions and to complete the survey.

Let us consider a population containing N "able" residents divided exclusively and exhaustively amongst L facilities or strata, in such a way that facility 1, or stratum 1, contains N_1 residents, facility 2 contains N_2 residents, …, and facility L contains N_L residents. Now, $N_1, N_2, \cdots, N_L$ represent the number of cognitively interview "able" residents within each facility, and $n_1, n_2, \cdots, n_L$ represent the number of randomly-selected residents (among "able" residents) within each facility. Thus, some required notation for stratified random sampling are:

$$L = \text{number of strata}$$
$$n_i = \text{number of randomly selected residents within facility } i$$
$$N_i = \text{number of cognitively interview "able" residents in facility } i$$
$$N = \text{number of cognitively interview "able" nursing home residents}$$
$$= N_1 + N_2 + \cdots + N_L = \sum_{i=1}^{L} N_i \, .$$

2.1.2 Family Member Survey

The same stratified sampling structure will be used to select family members for surveying. If more than one family member is available to respond to the family member survey, criteria for selecting the appropriate family member to receive the survey have been provided to facilities.

2.2. Instrument of Measurement

The survey questionnaires contain 10-15 domains of questions, covering topics such as: meals and dining, social services, activities, administration, direct care, environment, and overall satisfaction. Each domain consists of 2-10 relevant questions that researchers feel are most important to residents. Each question has the following possible responses: 'Always'(1), 'Sometimes'(2), 'Hardly Ever'(3), 'Never'(4), and, 'Don't Know/Not Familiar with Service'(5).

3. Summary of Results

We recommend using both numerical and graphical summaries to describe the findings. The numerical summary may include proportions, means, medians and frequencies for each possible response. The data are presented with response means for each question as well as proportions for each response. Data are grouped under each facility and also with respect to question category. The frequency of each response within a category is also given. Later, the data from each question category is combined to produce a category summary.

The graphical summary may include: relative histograms, relative histograms with multiple bars (horizontal or vertical) or a pie chart. Often, the vertical axis represents the relative proportion of the responses in each response category, and the horizontal axis may represent each of the 5 categories of responses. One may use different colors or intensities of shading to represent statewide versus facility summary statistics. For example, the proportion of "Always" responses for each facility can be represented in blue bars and its proportion for the statewide summary can be pictured in green bars. Or, we can use this side-by-side summary to compare residents' and family members' survey summaries.

3.1 Facility Summaries

We have a simple random sample within each facility. Let $\bar{y}_i$ denote the sample mean for the simple random sample of residents selected from facility i, n_i the sample size for facility i, μ_i the population mean for facility i, τ_i the population total for facility i, and p_i the population proportion, or fraction of residents responding in a certain way, such as "Always," in the ith facility.

Mean: For a given question, the unbiased estimator of population mean μ_i for ith facility is

$$\hat{\mu}_i = \bar{y}_i = \frac{\sum_{k=1}^{n_i} y_{ik}}{n_i} .$$

Proportion: For a given possible response, such as "Always," we compute the proportion or fraction of residents who gave that possible response to each question. The estimator of the population proportion p_i, for the residents in ith facility is

$$\hat{p}_i = \frac{\text{number of residents responding with "Always"}}{\text{number of residents sampled}} \text{ in } i\text{th nursing home.}$$

Categories: Within each question category, we report the frequency of each possible response to each question: 'Always'(1), 'Sometimes'(2), 'Hardly Ever'(3), 'Never'(4), and, 'Don't Know/Not Familiar with Service'(5). Additionally, the frequencies of each possible response are summarized for each category.

3.2 Statewide Summary

Having provided summaries from each facility, the statewide summary can be obtained by simply combining facility summaries in the following way.

Mean

It seems reasonable to form an estimator of τ, the statewide population total for all facilities in Ohio, as:

$$\underline{\sum_{i=1}^{L} \tau_i} \colon$$

Since the statewide population mean μ equals the population total divided by N, an unbiased estimator of μ by summing the estimators of the τ_i 's over all facilities and dividing by N (the total number of facilities). We denote this estimator by $\bar{y}_{\text{state}}$, where the subscript 'state' indicates the statewide sample mean. Then, the estimator of the overall statewide population mean μ is

$$\bar{y}_{\text{state}} = \frac{1}{N}\left(N_1 \bar{y}_1 + N_2 \bar{y}_2 + \cdots + N_L \bar{y}_L\right) = \frac{1}{N}\sum_{i=1}^{L} N_i \bar{y}_i = \sum_{i=1}^{L} w_i \bar{y}_i$$

where $w_i = \dfrac{N_i}{N}$. In other words, the statewide sample mean for the entire population is a weighted average of the individual facility means, $\bar{y}_i$, with weights proportional to the number of elements in each facility. Note that this gives larger facilities more "weight" in determining the statewide average. In order to allow evaluation of the estimator, and estimation of μ, we may also wish to place a bound on the error of estimation. We should base this bound on the variance or standard deviation of our estimator. Because the selections in different facilities are made independently, the variances of estimators for individual facilities can be added together to obtain variances of estimators for the whole population. Thus, the estimated variance of the overall statewide mean is:

$$\hat{V}(\bar{y}_{\text{state}}) = \frac{1}{N^2}\left[N_1^2 \hat{V}(\bar{y}_1) + N_2^2 \hat{V}(\bar{y}_2) + \cdots + N_L^2 \hat{V}(\bar{y}_L)\right]$$

$$= \frac{1}{N^2}\left[N_1^2\left(\frac{N_1 - n_1}{N_1}\right)\left(\frac{s_1^2}{n_1}\right) + N_2^2\left(\frac{N_2 - n_2}{N_2}\right)\left(\frac{s_2^2}{n_2}\right) + \cdots + N_L^2\left(\frac{N_1 - n_1}{N_1}\right)\left(\frac{s_L^2}{n_L}\right)\right]$$

$$= \frac{1}{N^2} \sum_{i=1}^{L} N_i^2 \left(\frac{N_i - n_i}{N_i} \right) \left(\frac{s_i^2}{n_i} \right)$$

where $s_i^2 = \dfrac{\sum_{k=1}^{n_i} (y_{ik} - \bar{y}_i)^2}{n_i - 1}$ represents the sample variance for facility i.

Proportion:

From the facility proportions, $\hat{p}_i$, we obtain statewide proportions. The estimator of the overall statewide population proportion p:

$$\hat{p}_{\text{state}} = \frac{1}{N} \left(N_1 \hat{p}_1 + N_2 \hat{p}_2 + \cdots + N_L \hat{p}_L \right) = \frac{1}{N} \sum_{i=1}^{L} N_i \hat{p}_i$$

The estimated variance of overall statewide proportion, $\hat{p}_{\text{state}}$ is:

$$
\begin{aligned}
\hat{V}(\hat{p}_{\text{state}}) &= \frac{1}{N^2} \left[N_1^2 \hat{V}(\hat{p}_1) + N_2^2 \hat{V}(\hat{p}_2) + \cdots + N_L^2 \hat{V}(\hat{p}_L) \right] \\
&= \frac{1}{N^2} \sum_{i=1}^{L} N_i^2 \hat{V}(\hat{p}_i) \\
&= \frac{1}{N^2} \sum_{i=1}^{L} N_i^2 \left(\frac{N_i - n_i}{N_i} \right) \left(\frac{\hat{p}_i(1 - \hat{p}_i)}{n_i - 1} \right).
\end{aligned}
$$

3.3 Display Summary on Web Pages:

A web page will be created which displays information from the survey. For each facility, the web page will list: Location, number of beds in the facility, number of residents and family members responding to the survey, facility summaries and the statewide summary, summary of responses in each category and the summary scores for each domain

One concern that surfaces in this analysis is that some facilities may not have any residents who would qualify for the resident survey (e.g. a resident facility for individuals with Alzheimer's may not have any residents cognitively able to complete the survey). No information related to resident satisfaction would be available for such facilities. Another concern is that some facilities may have only a few residents who respond to the survey. How many residents should

respond before summary statistics are generated for a facility? This is a subjective decision although it relates to the reliability of the summary statistics that are reported. A minimum of 5 respondents in a particular facility might be a reasonable lower bound for reporting facility-specific summaries. In any case, a caveat about the expected confidence interval of the responses should be provided. For example, "This facility received only N responses which is not enough to ensure that these data are +- 10% reliable". This would allow for facilities receiving very few responses to still have their results shown, but consumers would be aware that the survey was based on limited numbers.

Reference

Lohr, S.L. (1999) Sampling: design and analysis. Brooks/Cole Publishing Company. Pacific Grove, CA.